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MEANING

MECHANISM AND VITALISM

METAPHYSICS



# Key to Pronunciation

ā	ale, fate	ōō	foot, book
â	chaotic, duplicate	ou	out, devour
â	care	oi	oil, soil, avoid
ă	add, fat, account	ū	use, cube
ä	arm, father	û	unite, formulate
à	ask, sofa	û	urn, concur
ē	eve, we	ŭ	up, but, circus
ē	here, deer	ü	menu
è	event, befall	ch	chair, much
ě	end, bed, silent	g	go, begin
ẽ	maker, perform	ng	sing
ī	ice, file	th	then, smooth
ĩ	ill, him, charity	th	thin, worth
ō	old, note	tû	nature
ô	obey, anatomy	dû	verdure
ô	orb, corn	y	yet, beyond
õ	odd, not, connect	zh = z	in azure
ö	soft, cloth	κ = ch	in Ger. <i>ich</i> , <i>ach</i>
oo	food, tool	ŋ = Fr.	<i>bon</i>

' (primary accent) to indicate principal syllabic stress



**M** the thirteenth letter of the English and most of the other West European languages, is one of the four liquids, or semivowels; it is also classed as a labio-nasal, its sound being produced when with lips closed and the whole uvula lowered the breath makes a humming noise as it issues through the nostrils. The lips play the same part in the pronunciation of *m* as in that of *b*, but in pronouncing *b* the nasal passage has no part. Hence when that passage is obstructed or closed the sound produced is that of *b* not of *m*.

The *M* as a capital letter has the same form in the Greek and the Latin alphabets and in all the alphabets derived from them, and in all those alphabets generally the same sound value.

In English there are a few words of Greek origin, mostly technical, in which *mn* begins a syllable or a word: in such cases the *m* is silent, for example, mnemonic, nemonic.

In many words derived from other languages the *m* of the original word is changed to *n* in English, examples: Comitatus (Lat.) county, or contrariwise *n* is changed to *m*; Anglo-Saxon *henep* becomes *hemp*. Often *p* is added after *m* to give that letter greater distinctness, for example, *exemtus*, *exemptus*, *unkemmed*, *unkempt*.

**M. QUAD.** See LEWIS, CHARLES BERTRAND

**MAARTENS, Maarten**, *mār'tēn mār-tēnz*, pseudonym of the Dutch author, JOOST MARIUS WILLEM VAN DER POORTEN SCHWARTZ: b Amsterdam, 15 Aug 1858; d. Zeist, Holland, 4 Aug 1915. He passed his early life in England; was educated in Germany and at the University of Utrecht, was admitted a barrister but chose literature as a profession, and in 1890 published his first work, 'The Sin of Joost Avelingh,' which at once arrested the attention alike of critics and of the reading public. This, like all his volumes, was written at first hand in English, not, as has been sometimes supposed, translated from Dutch MS. Maartens thus presented the curious instance of an author electing to address wholly a foreign public. Indeed it was only with reluctance, to safeguard himself against unsatisfactory translations, that he consented to the publication of his books in Dutch.

**MAASIN**, *mā-ā'sin*, Philippines, (1) a pueblo of the province of Leyte, island of Visayas, situated on the extreme southwestern coast, 75 miles southwest of Tacloban. It is a handsome, well-built city, and has a large trade, mostly in hemp. Pop 22,000; (2) a town of the province of Iloilo, Panay, on a tributary of

the Sague branch of the Jalaur River, 18 miles northwest of Iloilo. Pop 9,700.

**MAASS, Otto**, Canadian chemist: b. New York, N. Y., 8 July 1890. After a course at the Montreal High School, he studied at McGill, Berlin, and Harvard universities. In 1917 he became professor in charge of physical chemistry at McGill and in 1923 was named Macdonald professor of physical chemistry there. He became chairman of the department of chemistry at McGill in 1937. He is also director and consulting physical chemist of the Canadian Pulp and Paper Research Institute. In 1940-41 he was president of Section III of the Royal Society of Canada. He has published 'Introduction to Physical Chemistry' (1931, rev ed. 1939), and papers dealing with pulp and paper, physical chemistry, etc.

**MAASTRICHT.** See MAESTRICHT.

**MAAT**, or **MA'T**, in ancient Egypt, the goddess of truth and justice. She is said to have guided the souls of the dead to Osiris (q.v.)

**MAB**, the fairy queen of Connaught and a familiar name in Celtic folklore. Mab has been celebrated by Shakespeare and other English poets. The name is of uncertain origin, being variously derived from the Midgard of the Eddas, the *Habundia* or *Dame Abonde* of Norman fairy lore, and from the Cymric *mab*, a child. According to Voss, Mab was not the fairy queen, the same as Titania, this dignity having been ascribed to her only by mistaking the use of the old English word *queen*, which originally meant only a woman. Queen Mab is mentioned in Shakespeare's 'Romeo and Juliet,' Ben Jonson's 'Satyr,' Randolph's pastoral of 'Amyntas,' Drayton's 'Nymphidia' and Milton's 'L'Allegro.'

**MABÁLACAT**, *mā-bā-lā'kāt*, a pueblo of the province of Pampanga, Luzon, 16 miles north of Bacolor, the provincial capital. It is on the main road, and on the Manila and Dagupan Railroad. Pop. 10,600.

**MABERY**, *mā'bēr-ī*, Charles Frederic, American chemist: b North Gorham, Me., 13 Jan. 1850; d. 26 June 1927. He was graduated at the Lawrence Scientific School, in 1876, and was assistant instructor in chemistry there from 1875 to 1883, when he became professor of chemistry in the Case School of Applied Science, serving until 1911; emeritus professor thereafter. In the investigation of the composition of American petroleum his work brought him into special prominence. He also

did valuable work in connection with electric smelting. The results of his original investigations since 1876 were published in the Proceedings of the American Academy of Arts and Sciences and in various chemical journals at home and abroad.

**MABIE, Hamilton Wright**, American editor, critic and essayist: b. Cold Spring, N. Y., 13 Dec 1846, d. Summit, N. J., 31 Dec 1916. He was graduated at Williams College in 1867 and from the Columbia University Law School in 1869. He joined the staff of the *Christian Union* (now the *Outlook*) in 1879 and later became associate editor. He was a member of the American Academy of Arts and Letters and received honorary degrees from Williams, Union, Western Reserve and Washington and Lee universities. In his lectures and papers he constantly advocated the reading of good books, and his own works on literature, etc., have done much to cultivate a good taste in the American reading public. Among others he published 'Norse Stories Retold from the Eddas' (1882); 'Nature in New England' (1890); 'My Study Fire,' first series (1890); 'Short Studies in Literature' (1891); 'Under the Trees and Elsewhere' (1891); 'Essays in Literary Interpretation' (1892); 'My Study Fire,' 2d series (1894); 'Nature and Culture' (1897); 'Books and Culture' (1897); 'Work and Culture' (1898); 'The Life of the Spirit' (1889); 'William Shakespeare—Poet, Dramatist and Man' (1900); 'Works and Days' (1902); 'Parables of Life' (1902); 'Backgrounds of Literature' (1903); 'Myths Every Child Should Know' (1905); 'Fairy Tales Every Child Should Know' (1905); 'The Great Word' (1905); 'Heroes Every Child Should Know' (1906); 'Legends Every Child Should Know' (1906); 'Christmas To-day' (1908); 'Introductions to Notable Poems' (1909); 'American Ideals, Character and Life' (1913); 'Japan, To-day and To-morrow' (1914).

**MABILLEAU, Léopold**, French economist: b. Beaulieu (Indre et Loire), 1853; d. La Boule, 16 Feb. 1941. After teaching in a number of institutions he became in 1906 professor at the National Conservatory of Arts. He held many positions connected with the improvement of social conditions and lectured in the United States on social and economic questions. Mabilieu was made an officer of the Legion of Honor and a number of his works were crowned by the Academy of Moral and Political Sciences. He edited the works of several authors, contributed to French magazines and published 'Victor Hugo' (Paris 1893; 5th ed., 1911), 'Histoire de la philosophie atomistique' (1895); 'La prévoyance sociale en Italie' (1898); 'La coopération en France' (1900); 'La mutualité française, doctrine et applications' (1904); 'Notions élémentaires d'instruction civique de droit usuel et d'économie politique' (1912). The latter was in collaboration with E. Levasseur and E. Delacourte.

**MABILLON, Jean**, zhōn mā-bē-yōn, French ecclesiastic and author: b. Saint Pierre du Mont, Champagne, 23 Nov. 1632; d. Paris, 27 Dec. 1707. Having joined the Benedictines of Saint Maur, he was chosen to assist Dom Jean d'Achery in the compilation of his 'Spicilegium Veterum Scriptorum,' and subsequently edited the works of Saint Bernard (1690) in

the series of the fathers published by his congregation. In 1683 he was sent to Germany by Louis XIV to collect documents relating to French history; and the applause with which his 'Iter Germanicum,' a narrative of the journey, was received, induced the king to send him to Italy in 1685 to make purchases for the royal library. A result of this tour was his 'Musaeum Italicum' (1687-89), a work of great value. Later he was selected by his superiors to refute Rancé, abbot of La Trappe, who had condemned the custom of permitting monks to study. His 'Essay on Monastic Studies,' which appeared in consequence in 1691, was equally remarkable for sound argument and good temper. His most important other works are 'Vetera Analecta' (1675-85); 'De Re Diplomatica' (1681); and 'De Liturgia Gallicana' (1685). He edited and published with Ruinart 'Acta Sanctorum Ordinis Sancti Benedicti' (1668-1702) and prepared the first four volumes of the 'Annales Ordinis Sancti Benedictini' (1703-39). A collection of his 'Ouvrages posthumes' appeared in 1724, and his 'Inedited Correspondence with Montfaucon, Maghabecci, etc.,' was edited by Valéry (1847). Consult Baackner, A., 'Mabillons Reise durch Bayern im Jahre 1683' (Munich 1910); Denis, P., 'Dom Mabillon en sa Méthode historique' (Paris 1910).

**MABINI, mà-bē'nē, Apollinario**, Filipino insurgent: d. Philippine Islands, 1903. He was educated in the Catholic College of Manila, entered the public service under Spanish rule, became advocate of the treasury, resigned in 1896, and entered the insurrection. He was imprisoned for nine months by the Spaniards and then associated himself with Aguinaldo, Rizal and Agoncillo. Although a sufferer from paralysis he was the soul of the revolutionary movement and by many is considered the ablest man produced in the revolution. He became privy councillor of Aguinaldo and for a time was Minister of Foreign Affairs and chief of the Supreme Court in the latter's so-called government. In 1899 he surrendered to the United States, was sent into exile, but allowed to return in 1903 when he took the oath of allegiance. He was the brains of the Malolos government but opposed the Malolos constitution because he believed that the Islands needed a strong centralized government and also because it did not provide for a separation of Church and State. He was of the Tagalog tribe. Consult Worcester, Dean C., 'The Philippines, Past and Present' (2 vols., New York 1914) and 'Philippine Insurrection Records' in the Archives of the War Department, Washington, D. C.

**MABINOIGION, mǎb-ī-nō'gǐ-ōn, The**, the name generally but incorrectly applied to all mediæval Welsh stories. Of the general title 'Mabinogion,' which Lady Charlotte Guest's English version (1838-49) has made familiar, John Rhys gives an explanation 'An idea prevails,' says Principal Rhys, 'that any Welsh tale of respectable antiquity may be called a mabinogi; but there is no warrant for extending the use of the term . . . For, strictly speaking, the word mabinog is a technical term belonging to the bardic system, and it means a literary apprentice. In other words, a mabinog was a young man who had not yet acquired the art of

making verse, but who received instruction from a qualified bard. The inference is that the 'Mabinogion' meant the collection of things which formed the mabinog's literary training — his stock in trade, so to speak; for he was probably allowed to relate the tales forming the 'four branches of the Mabinogion' at a fixed price established by law or custom. If he aspired to a place in the hierarchy of letters, he must acquire the poetic art." In Lady Charlotte Guest's later edition in one volume (1877), — the most convenient edition for reference, — 12 tales in all will be found. Of these, the most natively and characteristically Welsh in character are such tales as the vivid, thrice romantic 'Dream of Rhonabwy,' which owes little to outside sources. 'The Lady of the Fountain,' on the other hand, shows in a very striking way the influence of the French chivalric romances that Sir Thomas Malory drew upon so freely in his 'Morte d'Arthur.' In the admirably edited Oxford text of the Welsh originals by Rhys and Evans (1887-90), 'The Lady of the Fountain' appears under the title of 'Owain and Lunet'; and Lunet's name at once recalls Tennyson's 'Idylls of the King.' The old manuscript volume of the 'Mabinogion,' known as the 'Llyfr Coch o Hergest,' — the 'Red Book of Hergest,' — written in the dialect of South Wales, is in the famous library of Jesus College, Oxford, the one college in the older English universities which has a time-honored connection with Welsh scholarship and Welsh literature. The tales, though in their present form not older than the 12th century, embody traditions that were afloat prior to that date. Consult John, I. B., 'The Mabinogion' (London 1901); and Lloyd, E. J., 'The Mabinogion as Literature' (in the *Celtic Review*, Edinburgh 1911).

**MABLY, Gabriel Bonnot de**, gà-brê-ël bôn-ô de mà-blê, French ecclesiastic and publicist: b. Grenoble, 14 March 1709; d. Paris, 23 April 1785. His family name was Bonnot. Like his younger brother, the philosopher Condillac (q.v.), he was destined for the Church, and after studying at the seminary of Saint Sulpice in Paris was ordained subdeacon. He showed little liking for theology, and for some time was secretly employed in affairs of state by his relative Cardinal de Tencin, minister of Louis XV, conducting the most difficult negotiations and writing elaborate reports with an ability for which the minister received all the credit. Later he applied himself to literature, and in 1748 published his 'Droit publique de l'Europe,' which achieved a remarkable success. It was followed by 'Observations sur les Grecs' (1749); 'Observations sur les Romains' (1751); 'Entretiens de Phocion' (1753); 'Observations sur l'histoire de France' (1755); 'Principes des négociations' (1757); 'De la manière d'écrire l'histoire' (1773); 'De la législation' (1776); 'De l'Idée de l'histoire' (1778); and 'Principes de morale' (1784). Having been requested by the government of Poland to prepare for them a code of laws, he visited that country in 1771, and published in 1781 a work 'Du Gouvernement de la Pologne.' He was also consulted by the American Congress in 1783 on the preparation of the Constitution, and embodied his views in his 'Observations sur le gouvernement et les Lois des Etats-Unis d'Amérique' (1784). In this work

he foretold the speedy downfall of the United States. He was an idealiser of ancient Rome and was enamored of the socialistic state and the communism of wealth, and from his pessimistic views on modern social organization was known as the "prophet of woe." Consult Guervier, 'L'Abbé Mably, moraliste et politique' (1886); de la Serée, 'Mabylet les physiocrates' (1911).

**MABUCHI**, ma-boo'chê, Japanese writer and religious teacher: b. 1693; d. 1769. He was distinguished as a scholar, and utilized his great learning in the endeavor to purify the native religion, Shinto, from the accretions of Chinese and Buddhist philosophy, etc., whereby he regarded it as having been corrupted. His love and knowledge of antiquity enabled him to present the native faith in its original simplicity, and his teachings were exemplified in his own life. To him modern students are largely indebted for direct access to ancient Japanese poetry. He added greatly to the knowledge of the past. He was the first of the three great scholars (Motoori and Hirata being the others) who dedicated themselves to this work of simplifying the ancient faith of the country.

**MABUSE**, ma'buz', Jan, Flemish painter: b. Mauberge, Hainault, in 1472; d. Antwerp, 1 Oct. 1552. His real name was Jean Gossart (or Gossaert). When he became a member of the Guild of Saint Luke at Antwerp in 1503, he signed the register as Jennyn van Henegouwe (John of Hainault). He signed his early pictures Jennyn Gossart and those of his middle and last period Joannes Malbodius (John of Mauberge). In the register of the Guild of Our Lady at Middleburg he is entered as Jan de Waele (John the Walloon). It is not known from whom he learned his art, but at Antwerp he fell under the influence of Quentin Matsys (15th century). In 1508 Mabuse, as he is familiarly known, went to Rome with his patron, the magnificent Philip of Burgundy, visiting Verona and Florence on the way. He stayed in Rome a year and returned to the court of Burgundy in November 1509. He then was employed at the Duke of Burgundy's castle of Zuytburg, painting for Philip. After Philip's death in 1524, he entered the service of Adolphus of Burgundy. When Christian II of Denmark visited the Low Countries he asked Mabuse to paint his dwarfs and in 1528 he requested the artist to design the tomb for his queen, Isabella, in the abbey of Saint Pierre, near Ghent. Mabuse also painted the children of Christian II — John, Dorothy and Christine, which came into the collection of Henry VIII of England. Mabuse also designed and erected the tomb of Philip of Burgundy in the church of Wyck. Van Mander's biography accuses him of habitual drunkenness, but the great works produced by him, as well as their number, prove that he was a hard-working and painstaking artist, perfectly in command of his powers. In 1527 he accompanied Lucas of Leyden on a pleasure trip to Ghent, Mechlin and Antwerp. Mabuse seems to have been the first of the Netherland painters to go to Italy. He brought back a new style; and from his time to that of Rubens and Van Dyck it was considered the proper thing for all Flemish painters to go to Italy.



The best specimen of his early and purely Netherland is the famous 'Adoration of the Magi,' long at Castle Howard, England, and purchased by the National Gallery, London, in 1911 for the extraordinary sum of \$192,000. This great picture was painted in 1500 for the abbey of Grammont in eastern Flanders and was sold by the monks in 1605 to the Archduke Ferdinand, who placed it in a private chapel in Brussels. In the 18th century Charles of Lorraine acquired it and at his death in 1775 the picture passed to England. The signature of Jan Gossart appears in golden letters on the band of the crown on the negro king. In this great work there are 30 figures with an architectural background, much in the style of Memling and Roger van der Weyden.

The National Gallery (London) contains five other precious works by Mabuse, including the portrait of Jacqueline of Burgundy; portrait of a man holding his gloves; and the portrait of a man with a rosary. Hampton Court has the 'Three Children of Christian II, King of Denmark'; 'Adam and Eve in Paradise'; a portrait of 'Holbein'; 'Eleanor of Austria'; and a 'Holy Family'. The Louvre has a magnificent portrait of Jean Carondelet, chancellor of Flanders; a 'Virgin and Child'; a portrait of 'Bénédictin'; and 'a man and his wife.' 'Saint Luke painting the Blessed Virgin and Child' formerly in the cathedral of Mechlin but now in that of Prague, painted in 1515, is a fine example of Italianized Netherland art. Another celebrated picture was a large triptych, 'The Descent of the Cross,' painted for Maximilian of Burgundy for the monastery of Our Lady and Saint Nicholas at Middleburg, which perished when that building was burned in 1568. Durer saw it in 1520 and admired it extremely, although he said "the composition was not as good as the execution." Mabuse excelled in portraiture. Occasionally Mabuse turned to mythological subjects, such as 'Neptune and Amphitrite' (1516) in the Berlin Museum. His architecture is beautifully drawn and his painting of rich materials — damasks, embroideries and tapestries — is superb. Consult Segard, Achille, 'Mabuse, Jan' (in *Les Arts*, No. 123, p. 1, with illustrations including 'Adoration of the Magi,' Paris 1912); Weisz, Ernst, 'Jan Gossart' (Freis 1913).

**MAC**, or **MC**, a Gaelic prefix, as MacGregor, MacDonald, McKinley, etc. It corresponds with von in surnames of Teutonic origin, Fitz in those of Romance origin, or Ap or Ab in Welsh surnames.

**MACA**, a tribe of people living in the forests of the eastern slope of the Andes in central Ecuador. They live in huts of palm leaves, make pottery, hunt and cultivate yucca, corn and tobacco. The various tribes, not yet classified as to language, frequently war with one another. Their weapons are spears, blowguns and poisoned arrows. They dry the heads of slain enemies.

**MACABEBE**, mā-kābā'bā, Philippines, a pueblo of the province of Pampanga, Luzon, situated at the head of the Pampanga River delta, nine miles from Manila Bay and seven miles southeast of Bacolor. Pop 16,000.

**MACABER** (mə-kā'bər) **DANCE**. See **DANCE OF DEATH**.

**MACADAM**, māk-ād'am, John Loudon, Scottish engineer: b. Ayr, 21 Sept. 1756; d. Moffat, Dumfriesshire, 26 Nov. 1836. In 1770 he was sent to an uncle at New York, where he remained during the War of Independence, and realized a considerable fortune as agent for the sale of prizes. At the close of the war he returned to Scotland, and in 1798 was appointed agent for re-equipping the navy in the western ports of Great Britain, and took up his residence at Falmouth. He afterward resided for many years at Bristol. It was here, in 1815, on being appointed surveyor-general of the Bristol roads, that he resumed experiments he had made in Scotland, and first had full scope for putting in practice the important improvements in road-making which had long before occupied his thoughts. By 1823 his general success was admitted; and in 1827 he was made general surveyor of roads. In carrying out his improvement he had expended several thousand pounds from his private resources; and the House of Commons, having been satisfied of the fact by the investigation of a committee, both reimbursed the actual outlay and presented him with an honorary tribute of £2,000, presenting to him a total of £10,000. His invention was rapidly introduced throughout the civilized world, and his own name was made synonymous with it.

**MACADAM**, a modern system of road-making invented by J. L. Macadam (q.v.), which consists in forming the roads out of hard materials such as granite, or basalt broken into pieces, none of which are too large to pass through an iron ring 2½ inches in diameter, and then deposited evenly in a bed of from 6 to 12 inches in thickness. The bed thus laid becomes perfectly compact and smooth, and in proportion as it is worn away or cut into ruts by traffic can easily be restored by a new coating of materials. See **ROADS** and **ROAD-MAKING**.

**McADOO**, māk'a-doo', William Gibbs, American jurist: b. near Knoxville, Tenn., 4 April 1820; d. 1894. He was graduated in 1845 from the East Tennessee University at Knoxville, sat in the Tennessee legislature 1845-46 and served in the Mexican War in 1847. He was afterward admitted to the bar and was attorney-general of the Knoxville judicial district, 1851-60. He removed to Georgia in 1862, served in the Confederate army during the Civil War and in 1871 became judge of the 20th judicial district of Georgia. He published a volume of poems and, with H. C. White, 'Elementary Geology of Tennessee.'

**McADOO**, William Gibbs, American cabinet officer: b. near Marietta, Ga., 31 Oct. 1863; d. Washington, D. C., 1 Feb. 1941. Descended from a distinguished Southern family, his father, Judge William Gibbs McAdoo, a jurist and a soldier of the Mexican and Civil wars, became attorney-general of Tennessee some years after losing his wealth in the general devastation in the South caused by the Civil War. The subject of this sketch was educated at the University of Tennessee and admitted to the bar in 1885, notwithstanding that circumstances obliged him to leave the university in his junior year and earn his living as a clerk of the United States Circuit Court. He practised law in Chattanooga till 1892, when he came to New York and opened a law office. In 1898 he

formed a law partnership with Mr William McAdoo (a native of Ireland and no relation whatever), who in 1910-30 was chief city magistrate, and was formerly Assistant Secretary of the Treasury under President Cleveland. In his early days Mr. McAdoo had gained some practice in railroad work by running a street railway in Knoxville, an undertaking that proved a failure. His railroading propensities revived during his first years in New York City and he conceived the plan of tunneling the Hudson. With the aid and confidence of capitalists he succeeded in carrying that great undertaking to a successful issue. In 1902 he organized the New York and New Jersey Railroad Company (now the Hudson and Manhattan, of which he was elected president and director), and completed the Hudson tunnel scheme. He was vice-chairman of the Democratic National Committee in 1912, and in the following year Mr. Wilson, on his accession to the Presidency, invited him to take the office of Secretary of the Treasury. Mr. McAdoo severed his railroad connections and devoted himself to a task that was destined to become historic in the annals of national finance. The enormous financial transactions in which the United States government was involved owing to the European War are a matter of common knowledge. The raising of huge war loans and the financing of Allied belligerents were only the more conspicuous events of Mr. McAdoo's tenure of the Treasury. He was a leading architect of the Federal Reserve System and an active promoter of the Federal Farm Loan System. Throughout the vast network of national finance—taxation, distribution of government funds, war-risk insurance and the insurance of soldiers and sailors, economic problems of trade and agriculture, etc., Mr. McAdoo handled the complex ramifications and details with remarkable facility and judgment. When the United States government took over the entire railroads of the country in January 1918 Mr. McAdoo was appointed Director-General of Railways. He resigned as Secretary of the Treasury 16 Dec. 1918 and as Director General of Railways 10 Jan. 1919. In 1920 and 1924 he was a candidate for the Democratic nomination for President, and in 1933-38 was member of the United States Senate from California. In 1885 he married Sarah Flemming (d. 1912), and on 7 May 1914 he married Eleanor, daughter of President Wilson. Divorced and remarried 1934-35.

**McADOO**, Pa., borough in Schuylkill County; alt. 1,836 feet; 5m. S. of Hazleton; on the Lehigh Valley, and the Pennsylvania railroads. There are rich deposits of anthracite coal in this area, and coal-mining is the principal industry. Other industries of the borough are the making of paper boxes and textiles. There are water falls near by, and picturesque scenery. The borough was founded in 1880. Pop. (1930) 5,239; (1940) 5,127.

**McAFEE**, măl'ă-fē, Cleland Boyd, American clergyman. b. Fulton, Mo., 25 Sept 1866. He was educated at Park College, Union Theological Seminary, New York, and Westminster College, Missouri. He was ordained a Presbyterian minister in 1888, and from that date to 1891 he was professor of mental and moral philosophy in Park College. In 1901 became pastor of the Forty-first Street Presbyterian Church, Chicago, which he held until 1904, when he became

pastor of the Lafayette Avenue Church, Brooklyn. In 1912 he was made professor of didactic and polemical theology at the McCormick Theological Seminary, Chicago. He received the degree of Ph.D. in 1892. Writings include 'Where He Is' (1898); 'Wherefore Didst Thou Doubt' (1900); 'Faith, Fellowship and Fealty' (1902); 'The Growing Church' (1903); 'The Worth of a Man' (1903); 'The Tenth Commandment' (1903); 'The Mosaic Law in Modern Life' (1906); 'Studies in the Sermon on the Mount' (1910); 'The Greatest English Classic' (1912); 'His Peace' (1913); 'The Old and the New in Theology' (1914); and 'Psalms of the Social Life' (1917); 'The Christian Conviction' (1925); 'The Christian Message and Program' (1929).

**McAFEE**, Joseph Ernest, American clergyman; b. Louisiana, Mo., 4 April 1870. He is a brother of Cleland Boyd McAfee and was graduated from Park College in 1889, after which he studied in Union, Auburn and Princeton theological seminaries from 1889 to 1896. At Park College he taught Greek, the history of religion and ethics until 1906. In that year he became associate secretary of the Presbyterian Board of Home Missions of the Presbyterian Church in the United States, of which he was secretary 1914-17. In 1924 he became director of Community Service, Community Church, N. Y. His publications include 'Missions Striking Home' (New York 1908); 'World Missions from the Home Base' (1911); 'Religion and the New American Democracy' (1917).

**MACAIRE**, mă-kār (Le Chevalier Richard), a French *chanson de geste* of the 12th century, and one of the great poems of the Middle Ages, the theme of which is the false accusation brought against the queen of Charlemagne, called Blanche-Neur. *Macaire* is a fusion of two legends: that of the unjustly repudiated wife, and that of the dog that detects the murderer of his master. Macaire, a French knight, aided by Lieutenant Landry, murdered Aubry de Montdidier (q.v.) in the forest of Bondy. Montdidier's dog, named Dragon, showed such aversion to Macaire that suspicion was aroused and Macaire and the dog were summoned to a single combat. The result was fatal to Macaire, who died, confessing his guilt. Dragon was called the *Chien de Montargis* because the murder took place near the castle of Montargis. The encounter was depicted over the chimney of the great hall in the castle in the 15th century. *Macaire* is only preserved in the Franco-Venetian *geste* of Charlemagne (Bibl. St. Mark MSS. XIII), in a mixed form of French and Venetian dialects. It has been reprinted several times. Consult 'Macaire' (Paris 1866), ed. Guessard in the series of 'Anciens poètes de la France'; Paris, Paulin, 'Hist. litt. de la France' (Vol. XXIII, 1873); Gautier, L., 'Epopées françaises' (Vol. III, 3d ed., 1880); Paris, G., 'Hist. poét. de Charlemagne' (1865). Jean de la Trille, 'Discours notable des duels' (Paris 1607), says the encounter with the dog took place under Charles V. The story was also told in another *chanson de geste* of the 12th century called 'La Reine Sibille,' which only exists in fragments. There are two French plays on the subject: one 'Le Chien de Montargis' by Guilbert de Pixérécourt (1814), which was translated and played at Covent Garden, London (1814); and the other, 'Le chien d'Aubry.'

A manuscript in prose of 'Macaire' was found in the Bibliothèque de l'Arsenal in Paris about 1866.

**MACAIRE, Robert**, name of the villain in the French melodrama, 'Auberge des Adrets' (1823), in which Frédéric Lemaitre made his reputation. The character was modified by Lemaitre in his comedy 'Robert Macaire,' a sequel, in collaboration with Benjamin Antier. It was performed at the Theatre des Folies-Dramatiques, Paris, in 1834. In this, which Theophile Gautier calls «the great triumph of the revolutionary art» which followed the «Revolution of July,» is expressed audacity and wit. It is an attack against social order. «Frédéric Lemaitre,» says Gautier, «created in the personage of Robert Macaire a kind of humor that is almost Shakespearean. In it we find terrible gaiety, sinister laughter, bitter derision, pitiless raillery and a biting sarcasm, mingled with elegance, suppleness and astonishing grace. Robert Macaire and Bertrand are Don Quixote and Sancho Panza in crime.» Consult Alhoy, Maurice, and Huart, L., 'Les cent Robert Macaire, composés et dessinés par H. Daumier' (Paris). Robert Louis Stevenson and W. E. Henley wrote a play 'Robert Macaire'. (Stevenson's Works, Vol XX) Consult *The New Review* (Vol. XII, p. 685).

**McALESTER, ma-kāl'ēs-tēr, Miles Daniel**, American general: b. New York, 1833; d. 1869. He was graduated from the United States Military Academy in 1856 and entering the engineer service became chief engineer of the Department of the Ohio in 1862. He served under Grant before Vicksburg and took part in the operations against Mobile.

**McALESTER, Okla**, city and Pittsburg County seat, alt. 750 feet, on the Missouri, Kansas and Texas and the Chicago, Rock Island and Pacific railroads, 62m. SW. of Muskogee, and on state and federal highways. There is a municipal airport. The surrounding area presents much fertile farmland, together with coal and forest lands. Coal mining is the leading industry, but the processing of foods, cotton ginning, woodworking, and foundry operations are important factors in the city's economics. The city has some fine modern buildings; a Carnegie library; several social and civic organizations; good banks, hotels, churches, and schools. A state penitentiary is located near by. J. J. McAlester, pioneer settler for whom the city was named, was the founder of North McAlester, which was incorporated in 1899. South McAlester was civilly organized in 1900. They were consolidated, as McAlester, in 1906. The city is under commission government, administered by a mayor, six commissioners, and a city manager. Pop. (1930) 11,804; (1940) 12,401.

**MACALESTER COLLEGE, Saint Paul, Minn.**, a coeducational institution, founded in 1885 under the auspices of the Presbyterian Church. A four-years' college course leads to the degrees of bachelor of arts and bachelor of science, and a conservatory of music grants the degree of bachelor of music. The average annual enrolment of students is 500, and its faculty 40. Its total endowment is \$1,640,000. It has excellent buildings and total resources of \$2,339,000. Its library has over 19,500 bound volumes. Its total income (tuition and endowment interest) is about \$186,000.

**McALL (ma-kāl') MISSION**, a Protestant association founded in 1871 by Robert Whitaker McAll and his wife for religious work among the working people of France. On 17 Jan. 1872 the first station was opened in Belleville, one of the manufacturing suburbs of Paris. The work consists largely in striving to interest people in the questions pertaining to salvation of souls and then urging them to affiliate with some one of the nearby Protestant churches. No effort is made by the mission to establish churches, but some educational work has been begun in the large cities. Friends of the movement in America founded an American McAll Mission in 1883 with Philadelphia as headquarters, and there are also auxiliary societies in Great Britain, Canada and other countries.

**McALLEN, Texas**, city in Hidalgo County, alt. 122 feet, on the Southern Pacific and the Missouri Pacific railroads, 50m. NW. of Brownsville. Here citrus crops are grown on irrigated land, and canning is a dominant industry. The city was incorporated in 1909. It has mayor and council. Pop. (1930) 9,074; (1940) 11,877.

**McALLISTER, Addams Stratton**, American engineer: b. Covington, Va., 24 Feb. 1875. He was educated at the Pennsylvania State College and at Cornell University. In 1898 he became electrical engineer for the Berwind-White Coal Mining Company and in 1899 held a similar position in the Westinghouse Electric and Manufacturing Company. In 1901 he was assistant in physics in Cornell, instructor in 1902-03 and acting assistant professor of electrical engineering there in 1903-04. He also was lecturer on engineering at the Pennsylvania State College in 1909-14. In 1905 he became associate editor of the *Electrical World* and in 1912 was made full editor of this publication. In 1917 he became secretary of American Engineering Service of Engineering, a member of national lighting committee of the Advisory Commission of Council of National Defense and also a member of the War Committee of Technical Societies. In 1914-15 he was president of the Illuminating Engineering Society, afterward becoming its chairman and secretary. In 1923 he became connected with the Bureau of Standards, Washington. Cornell gave him the degree of Ph.D. in 1905. He is the inventor of alternating-current machinery. Dr. McAllister has contributed more than 100 articles on engineering to various technical journals and is the author of 'Alternating Current Motors' (1906; 3d. ed., 1909), and 'Standard Handbook for Electrical Engineers' (1907). He compiled and edited the 'National Directory of Commodity Specifications,' published by the United States Department of Commerce in 1925.

**McALLISTER, Ward**, American society leader: b. Savannah, Ga., about 1830; d. 1895. He came of a family several of whose members were conspicuous at the bar. With his father, in 1850, he went to California, where he remained two years, and whence he removed to Newport, R. I., and afterward to New York City. Becoming possessed by marriage of a considerable fortune he was able, by means of influential connections through his mother and wife, to enter into social life with the advan-

tages of personal qualifications and family prestige. As a raconteur as well as an accomplished gourmet he had already attained prominence within a select circle when, by a well-turned remark, he became the leader of leaders in New York society, which, according to his strict limitation, included but 400 persons. The popular expression «The Four Hundred» originated from this assertion of McAllister's. He made contributions to the press, which, however, impaired rather than strengthened his unique position, as did also his volume 'Society as I Have Found It' (1890).

**MCALLISTER, Fort.** See **FORT McALLISTER.**

**MACALLUM, Archibald Byron,** Canadian educator b Belmont, Ontario, in 1859. After receiving his education in the Toronto and Johns Hopkins universities he became lecturer on physiology (1887) and professor in the medical faculty of Toronto University (1891-92). From 1892 to 1901 he was associate professor in the arts faculty there and full professor after 1901. In 1895-97 he was president of the Canadian Institute. In 1901 he was made a Fellow of the Royal Society, Canada, and in 1906 of the Royal Society of London. In 1911 he was elected president of the American Society of Biochemists. He published scientific articles in the *Journal of Physiology*, *Proceedings of the Royal Society Quarterly Journal of Microscopical Science*, *American Journal of Morphology* and *Journal of Anatomy and Physiology*. D. 5 April 1934.

**McALPINE, William Jarvis,** American civil engineer. b: New York City, 30 April 1812; d. Staten Island, N. Y., 16 Feb 1890. Completing his elementary education at schools in Newburgh and Rome N. Y., young McAlpine was apprenticed at the age of 15 to John B. Jervis, civil engineer. He remained with Jervis for eight years as apprentice, assistant and resident engineer, and, in 1836, succeeded Jervis as chief engineer of the eastern division of the Erie Canal. Several years later, he became chief engineer of the government dry dock in Brooklyn, N. Y., and with the completion of that difficult project, found himself well established in his profession. From 1852-57 he served as state engineer and railway commissioner of New York, and, during his tenure of office, made a number of important studies on comparative costs of rail and water transportation. As chief engineer of the Third Avenue drawbridge over the Harlem River, New York (1860-61), Mr. McAlpine pioneered in the design and sinking of the caissons for the piers. He later acted as chief or consulting engineer in the building of a number of the nation's largest bridges, among them the Eads Bridge, over the Mississippi at St. Louis; the Clifton suspension bridge at Niagara; and the Washington Bridge spanning the Harlem in New York City. He also directed the construction of the New York State Capitol at Albany in 1873, and later, as engineer of parks for New York City, built the famous Riverside Drive. At the time of his death, he was planning an «arcade railway» which was to provide an underground transit system for New York City, as well as second level streets beneath the more congested thoroughfares. Although remarkable in its conception and in many respects practicable, McAlpine's plan met with

much opposition from property owners and was later abandoned. He was well known in professional circles in Europe and in England, and was consulted on a number of major projects, among them the Manchester Ship Canal, a proposed railroad to India, and improvement of navigation of the Danube River near the «Iron Gate». For many years he was the only American who could claim membership in the British Institution of Civil Engineers. He was elected president of the American Society of Civil Engineers in 1870, and honorary member in 1889. Mr. McAlpine was a frequent contributor to technical publications, and in addition to reports and a number of original papers, he wrote a textbook, 'Modern Engineering' (1874). At the time of his death he was the acknowledged dean of his profession, and one of the last of the «general practitioners» of civil engineering.

**McANENY, George,** American civic administrator b Greenville, N. J., 24 Dec. 1869. He was graduated at the Jersey City High School in 1885 and entered journalism, serving on the staff of several New York newspapers from 1885 to 1892. From 1892 to 1894 he was assistant secretary of the Civil Service Reform League, of which he became secretary in 1894. He held this position until 1903, serving on committees that drafted the municipal home-rule section of the state constitution in 1894 and the state Civil Service Law in 1899. In 1902 he was a member of the New York Civil Service Commission and also of the commission to revise the city charter in 1908. In 1903-06 he read law with Edward M. Shepard. In 1906-09 he was president of the City Club of New York; in 1910-13 he was president of the borough of Manhattan, and in 1914-16 president of the board of aldermen (fusion ticket), and was active in obtaining municipal markets for New York City. In 1902 he drafted the civil service rules now in force in New York City; was a member of the commission appointed by the governor to revise the New York City charter (1908); chairman of the transit committee of the New York board of estimate and apportionment, which, with the Public Service Commission, developed New York's subway system, and chairman of committee on city plan 1914-16. From 1916 to 1921 he was executive manager of the *New York Times*, resigning in the latter year to become a member and chairman of the New York Transit Commission. Following the abolition of this body in 1926 he resumed his position with the *New York Times*. In 1913 Paris gave him the medal of the Société des Architectes Diplômés par le Gouvernement Français for services to city planning and architecture in the United States. Vice-president, Hampton Association National Municipal League, and president of the New York Kindergarten Association. In 1914 he was Dodge lecturer at Yale. The lectures were published under the title of 'Municipal Citizenship' (New York 1915). In 1924 he was Day Foundation lecturer at Union College.

**MACAO, mā-kow' or mā-kä'ô,** China, a Portuguese settlement and seaport on the west shore of the mouth of the Canton River, 40 miles west of Hongkong. It occupies a high peninsula, formerly the island of Macao, but now united by a narrow isthmus north of the town with the island of Hiang-shan, and, with

the small islands of Taipa and Colôane, forms a province. The settlement is about eight miles in circuit, and its limits landward are defined by a barrier wall stretching across the isthmus, where a guard of Chinese troops is stationed to prevent foreigners from trespassing on the Inner Land. The town occupies a slope gradually descending to the sea, backed by a range of lofty hills, and having an extensive plain stretching east. It is nearly surrounded with water, and is open to the sea-breezes on every side. The houses occupied by the foreign population are large, roomy and open, and the shops are numerous. The city is divided into two wards, one inhabited by Chinese and the other by non-Chinese, each with its own administrator. The quay or «Praya Grande» is commodious, forms a pleasant drive and is protected by a battery. The harbor is formed between the peninsula on which the town stands and the large island of Twce-hen-shan, to the west. Macao is considered the healthiest residence in southeast Asia with a mean annual temperature of 74°. Near it, in a beautiful garden, is the grotto in which the poet Camoens is said to have finished the «Lusiad». The principal exports are tea, cassia and cassia oil, anise and anise oil, fish, and opium. The commerce (mainly in the hands of the Chinese), which is chiefly carried on with Hongkong, Canton, Batavia and Goa, has greatly declined since the opening of the rival free ports, and a considerable part of the colonial revenue is drawn from a tax on the gambling tables for which Macao is notorious. Imports in 1936 were valued at 15,723,585 patacas; exports at 9,143,627 patacas. (Pataca = 34 cents.) Trade is controlled by Chinese. The Portuguese first obtained permission to form a settlement and to trade at Macao in 1557. From 1563 they were required to pay a yearly tribute to the Chinese government, and their trading privileges were much restricted till 1844, when they were allowed to carry on commerce with the five ports then open to foreigners. Macao was then declared a free port, but the Chinese continued to ignore the territorial claims of the Portuguese until 1887 when a treaty was concluded. Macao from its convenient situation was the place of retreat for European merchants and missionaries when threatened by uprisings of race or religious feelings in China. Robert Morrison, the first Protestant missionary in China, was buried here. Pop. about 200,000 (4,000 Portuguese).

**MACAPA**, má-ka-pä, Brazil, town on the delta of the Amazon, 110 miles from the mouth of that river. It has a fine harbor with fortifications. The exports are chiefly timber and fine woods for the furniture trade. Pop. 4,000.

**MACAQUE**, ma-käk', one of the small, short-tailed Asiatic monkeys of the genus *Macacus* and family *Cercopithecidae*, which are so docile, intelligent and interesting as a rule that they are common in menageries and frequently kept as pets; their gentleness and playfulness disappears as they grow old, however, and they are then likely to become morose and savage. They go about in troops, keeping by themselves, and differing from other monkeys in most of their actions and cries. Some of the best known are the quaintly crested capuchin or bonnet-monkey (*M. simicus*), excessively common and pestiferous in southern India; the entellus mon-

key (q.v.) of northern India; the large pig-tailed (*M. leoninus*) of Japan, whose likeness is seen in numberless Japanese drawings and carvings. Ranging over so wide a variety of countries, their habits and food differ greatly. Besides the fruit, juicy leaves and insects eaten by most monkeys they devour small reptiles, young birds, frogs and crabs, the last-named forming the principal diet of a Malayan species (*M. cynomolgus*). One species is isolated in the mountains of Algeria and Morocco, whence they were long ago carried, probably first to Gibraltar, where they are known to the English of the garrison as «Barbary apes» (*M. unius*), and the small band upon the Rock are carefully protected from harm.

**MACARIANS**, name given to the followers of the monastic customs of the elder Macarius of Egypt, or of the younger Macarius of Alexandria, contemporary monks of the 4th century who were noted for their austere rule. The name was also given to the followers of the Monothelite Macarius, patriarch of Antioch in the 7th century.

**MACARONI** (Ital. *maccheroni*), a peculiar paste or dough prepared from wheat flour and manufactured into tubes or ribbons. It is an Italian invention, and, though made by a simple process, has never been produced with so great success in any other country. The grain grown in the more southern countries of Europe is said to possess a greater amount of gluten, and is therefore better adapted to this manufacture. The wheat, after being washed, is freed from the husks and ground in water mills, when hot water is added till it is of the consistency of stiff dough. Five different qualities of flour are obtained by an equal number of siftings, the last giving the finest and most delicate that can be made. To reduce the dough to tubes or ribbons a hollow cylindrical cast iron vessel is used, having the bottom perforated with holes or slits. When this is filled with the paste a heavy iron plate is driven in by a powerful press, which forces the paste through the holes and gives it the shape of the perforations, the workman cutting off the pieces of the desired length as they come through. During this process it is partially baked by a fire made under the cylinder. Sometimes the flat pieces are formed into tubes by uniting the edges before they are thoroughly dry. After being hung up for a few days they are ready for use. The largest tubes are called *maccheroni*, the smaller *vermicelli* and the smallest *fedelini*. Macaroni is prepared for the table by boiling and baking with grated cheese, and is in common with vermicelli and the other varieties much used in the preparation of soups. Since about 1880 the use of macaroni in the United States has largely increased, and where it was once only consumed by Italians in this country, it is now eaten by all classes. Numerous macaroni factories have been established in New York and elsewhere. The United States imports annually from Italy over 5,000,000 pounds of macaroni.

**MACARONIC VERSE** (It. *maccheronico*, relating to macaroni, from *maccheroni*, macaroni), a type of humorous poetry in which modern words, given Latin endings, are introduced into Latin verse. The name is also given



to poetry which is merely a mixture of Latin (in some cases Greek) and the vernacular of the author. Macaronic verse is said to have originated with Teofilo Folengo (1491-1544), a learned Benedictine monk, who left his monastery and lived a worldly life, supporting himself by writing ridiculous poetry. His 'Liber Macaronicus' appeared in 1517 and was highly successful. One authority states, however, that Folengo was not the inventor of this verse form, a 'Carmen Macaronicum de Patavinis' having been published in 1490 by Tisi degli Odassi. The term *macaronic* was chosen with reference to the mixture of ingredients which go into the making of the food macaroni. Folengo's 'Liber Macaronicus' greatly influenced Rabelais' work, 'The Voyage of Pantagruel,' and was imitated by a number of minor Italian poets. In France in 1573, Antonius de Arena (Antoine de la Sable) published a mock epic on Charles V's campaign in Provence, after the style of Folengo's poem. Moliere made use of macaronic verse in 'Le Malade imaginaire'; macaronic prose, however, is very rare. It is thought that this form of poetry might have been suggested by the barbarous Latin used by the monks. Consult Nodier, Charles, 'Du Langage factice appelé macaronique' (1834); Genthe, F. W., 'Geschichte der Macaronischen Poesie' (Leipzig, Halle, 1836); Sandys, William, 'Specimens of Macaronic Poetry' (London 1837); Morgan, J. A. (ed.), 'Macaronic Poetry' (New York 1872), and Brunet, J. C., 'Littérature macaronique' (Paris 1879), Sullivan, Sister Carmeline, 'Latin Insertions and the Macaronic Verse in Piers Plowman' (Washington, D. C., 1932).

**MacARTHUR, Arthur**, United States Army officer. b. Springfield, Mass., 2 June 1845; d. Milwaukee, Wis., 5 Sept. 1912. He entered the service during the Civil War as a first lieutenant in the 24th Wisconsin Infantry, in August 1862, and thereafter saw action in the battles of Perryville, Stone River, Dandridge, Franklin, and in the Atlanta campaign. He was mentioned in dispatches for "gallant and meritorious service," and in 1890, was awarded the Congressional Medal of Honor for bravery in the battle of Missionary Ridge (1863). By the end of the war, he had been brevetted a colonel of the regiment. In February 1866, he entered the regular army, and from then until 1886, was stationed in the southwest, where he took part in several Indian campaigns. In May 1898, shortly after the beginning of the Spanish-American War, he was appointed brigadier general of volunteers, and assigned to the Philippines. In August of that year, he was commissioned major general of volunteers. In 1899, under Gen. Elwell Otis, he led a division against Aguinaldo, and in 1900, was appointed commander of the Philippine Division, and succeeded General Otis as military governor of the islands. He was promoted major general in the regular army in February 1901, and in 1906, was made assistant chief of staff of the United States Army, with the rank of lieutenant general. During the Russo-Japanese War, he was detailed as a special observer with the Japanese Army (1905). He was retired from active service in June 1909. Lieutenant General MacArthur was the father of General Douglas MacArthur (q.v.).

**MacARTHUR, Douglas**, American general. b. Little Rock, Ark., Jan. 26, 1880. Generally regarded as one of the ablest military leaders the United States has ever produced. General MacArthur is the son of the late Lieut. Gen. Arthur MacArthur (q.v.) whose own distinguished career included service in the Civil War, in the Philippines during the Spanish-American War, and a term as military governor of those islands. Young MacArthur was graduated from West Point at the head of his class in 1903; commissioned second lieutenant in the Corps of Engineers, and thereafter fulfilled a number of assignments—in the Philippines, on the Pacific Coast, in Japan, and in Washington (as aide de camp to President Theodore Roosevelt, 1906-07). During the next few years, he taught in army schools, and from April to September 1914, served with the Vera Cruz Expedition; from 1913-15 and 1916-17 he was a member of the General Staff; and in August 1917, was appointed chief of staff of the 42d (Rainbow) Division, with the rank of colonel. In the First World War, he saw action in the Champagne-Marne and Aisne-Marne defenses; was promoted brigadier general in June 1918, and given command of the 84th Infantry Brigade, which he led in the St. Mihiel, Essey, Pannes, Meuse-Argonne, and Sedan offensives. He was twice wounded in action in 1918, and was cited for "extraordinary heroism," having joined his men in battle in the du Fays salient, France. For his services in the war, he received from the United States the Distinguished Service Cross, the Distinguished Service Medal, and the Purple Heart. From November 1918 until April 1919, he was with the Army of Occupation in Germany. Returning to the United States, he was appointed superintendent of the United States Military Academy, 12 June 1919, the youngest officer ever to hold that post. In 1922, he was again dispatched to the Philippines, and from June until November of that year was attached to headquarters, Philippine Department; from November 1922-June 1923, he commanded the District of Manila; and from June 1923-January 1925, the 23d Infantry Brigade at Fort William McKinley. (He was promoted major general 17 Jan. 1925.) After a period of service in the United States he was appointed commander of the Philippine Department in 1928. In November 1930, President Hoover named him chief of staff of the United States Army, which post carries with it the rank of general. At that time he was but 50 years of age, the youngest United States general since Grant. As chief of staff, he reorganized the nation's defenses, increased the air corps and the enlisted personnel, speeded up the army's mechanization, and urged co-ordination of air and ground forces. President Roosevelt retained General MacArthur as chief of staff beyond his term of office in order that he might complete his reorganization program. In 1935, he was again sent to the Philippines (at the request of the Philippine president, the late Manuel Quezon) as military adviser to the Commonwealth government; and in June 1936, Quezon named him field marshal of the Philippine Army. On Dec. 31, 1937, General MacArthur was placed on the army's retired list, at his own request, but remained in the Philippines, and continued the organization of the islands' defenses and the building of a native army, in anticipation of the

Commonwealth's attaining its independence in 1945. On July 26, 1941, as American-Japanese relations grew more strained, he was recalled to active service, appointed commanding general of the Far East Command, and commissioned lieutenant general. After Japan's attack on Pearl Harbor on Dec. 8, 1941 (December 7, U. S. time), he was named commander in chief of United States armed forces in the Far East, with the rank of full general, and charged with the defense of the islands. He led American and Filipino troops against the Japanese, and when forced to abandon Manila on Dec. 26, 1941, withdrew his forces to Bataan Peninsula. His magnificent defense of Bataan astounded military experts and endeared him to the American people. In March 1942, he was ordered by the late President Roosevelt to surrender his command to Maj. Gen. (now Gen.) Jonathan M. Wainwright, and evacuate to Australia. On March 16, he assumed command in that theater, with the title of commander in chief of Allied forces in the Southwest Pacific area. On March 16, 1943, General MacArthur completed his first year in Australia, a year whose first weeks proved discouraging in the extreme, bringing to his command a slow and inadequate supply of men and matériel. He succeeded, however, in co-ordinating his forces, and in May 1942, made his first tentative move on the road back. Then followed in rapid succession the Japanese defeat in the Coral Sea in that same month; the Battle of Midway on June 7, which ended the Japanese threat to Hawaii; and on August 7, the beginning of the Solomon Islands campaign with the landing of U. S. Marines on Guadalcanal. In November 1942, General MacArthur personally directed the Allied drive from Port Moresby on the south coast of New Guinea, across the Owen Stanley Mountains, to the island's north coast, and dislodged the Japanese from Buna and Gona. On March 3, 1943, he announced the destruction in the Bismarck Sea of a 22-ship Japanese convoy advancing on New Guinea. With Admiral William F. Halsey, he launched a joint offensive in the Southwest Pacific on July 1, 1943. There followed Allied landings and conquests in the Gilberts, Marshalls, and the Marianas, pointing along the sea road to Tokyo. On Oct. 20, 1944, General MacArthur made good his promise to return to the Philippines with the invasion of the Philippine island of Leyte; less than three months later, Jan. 9, 1945, he invaded Luzon. The ensuing liberation of Manila and reconquest of the Philippines paved the way for his operations in the Ryuku and other enemy-held archipelagos. When the Japanese government radioed its surrender offer on Aug. 14, 1945, General MacArthur, as senior Allied officer in the Orient, was designated to arrange terms of capitulation with Japan's representatives. On Sept. 2, aboard the U.S.S. *Missouri* in Tokyo Bay he accepted Japan's formal surrender to the Allies. Thereafter he commanded the Allied Occupation Army.

**MacARTHUR, Duncan**, American pioneer: b. Dutchess County, N.Y., June 14, 1772; d. Ohio, 1839. His family removed in 1780 to the western frontier of Pennsylvania, and at 18 years of age he went to seek his fortune in the wilderness, and participated as a ranger or scout in the warfare with the Indians in Kentucky and Ohio, until the victory of General Wayne in 1794 gave peace to the Western country. About the commencement of the 19th century he

settled in Ohio as a surveyor, and in 1805 became a member of the Ohio legislature, and was appointed major general of the territorial militia. In the War of 1812 he received the commission of brigadier general in the army, and succeeded General Harrison in 1811 in command of the army of the West. After the peace, as a joint commissioner with General Cass, he negotiated the treaty with the Indians of Ohio for the sale of their lands in that state, which was ratified in 1818. He served again in the Ohio legislature 1815-21, and in 1823-25 was a Representative in Congress from that state. In 1830 he was elected governor of Ohio.

**McARTHUR, John, Jr.**, American architect: b. Bladenock, Wigtownshire, Scotland, May 13, 1823; d. Philadelphia, Pa., Jan. 8, 1890. He came to the United States as a child and was apprenticed to his uncle, a Philadelphia carpenter. He later studied drawing and design at the Franklin Institute under Thomas U. Walter, architect and teacher. Thereafter, young McArthur had much practical experience in his chosen field, as apprentice, later as foreman and superintendent, and at the age of 26, won the first premium for a design of a building for the House of Refuge at Philadelphia. He soon became well established as an architect, and designed many important buildings, both public and private. Among them were the Public Ledger Building, the George W. Childs' mansion, both in Philadelphia; buildings at Lafayette College at Easton, Pa.; and the State Asylum for the Insane at Danville, Pa. During the Civil War, he worked for the United States government, and was architect of the naval hospitals at Mare Island, Annapolis, and Philadelphia. Some of his finest work was done in the construction of the Philadelphia City Hall or Public Buildings, at one time one of the two largest public buildings in the United States. Mr. McArthur's work was sound in construction and design, and lost nothing by comparison with that of his contemporaries. He was considered by many a worthy successor of Latrobe, Strickland, Mills, Haviland, and Walter, all self-trained designers and architects.

**MacARTHUR, Robert Stuart**, American Baptist clergyman: b. Dalesville, Quebec, July 31, 1841; d. Daytona Beach, Fla., Feb. 23, 1923. Graduated from University of Rochester, 1867, and from Rochester Theological Seminary, 1870, and from May 1870 to September 1911 was pastor of Calvary Baptist Church, New York, when he resigned, having been elected president of the Baptist World Alliance. He went to Russia to secure from the czar's government permission to buy land on which to erect a Baptist Bible College. He later went to Burma as president of the alliance to assist in celebrating the centennial anniversary of Adoniram Judson's mission work in Burma. He was for a long period connected editorially with the *Christian Inquirer* and *Baptist Review*, and lectured on foreign travel. His publications include *Calvary Pulpit*; *Current Questions for Thinking Men*; *Lectures on the Land and the Book*; *Around the World*; *Old Testament Difficulties*; *Advent and Other Sermons*; *Royal Messages of Cheer and Comfort*; *The Christic Reign*; *The Old Book and the Old Faith*; *Divine Balustrades*; *The Celestial Lamp*; *The Question of the Centuries*, and *Quick Truths and Quaint Texts*.

**McARTHUR, William Pope**, American naval officer and hydrographer. b. Ste Genevieve, Mo., 2 April 1814; d. aboard ship, 23 Dec. 1850. In February 1832, he was appointed midshipman in the United States Navy, spent several years in the South Pacific station, and later attended the naval school at Norfolk, Va. During the second Seminole War (1837-38), he commanded one of the vessels in the expedition to the Everglades. He was assigned to duty with the United States Coast Survey in 1840, and in the following year, took part in the Gulf Coast Survey. Promoted lieutenant in 1841, in 1848 he commanded the hydrographic party that made the first preliminary survey and reconnaissance of the Pacific coastline from Monterey to the Columbia River. He died of acute dysentery as his ship entered Panama Harbor on the return voyage.

**McARTHUR**, Ohio, town and Vinton County seat; alt. 767 feet; on the Chesapeake and Ohio Railway, 75m SE of Columbus. Local clays provide raw materials for brickmaking, the town's principal industry. McArthur was platted in 1815. Pop. (1940) 1,288.

**MACASSAR**, Celebes, the capital of a district of the same name in the island of Celebes on the west coast of the southern peninsula near the southern end of Macassar Strait separating Celebes from Borneo. It is the chief town of the Dutch government of Celebes. Macassar consists of the Dutch town and port, Vlaardingen, where the governor of Celebes resides, and the Malay town, which lies inland. The Portuguese claim to have visited Macassar in 1512; but there was no permanent Portuguese settlement until the 17th century when the English and Dutch also appeared on the scene. In 1660-68 the Dutch, after decisive victories on land and sea, succeeded in driving the Latins from Celebes and establishing themselves. All attempts of the English to supplant the Dutch were unsuccessful and the Dutch have been masters for two centuries and a half, with the exception of one short period of British occupation in the early 19th century. The important buildings are the official residence of the governor of Celebes; the new museum, containing a valuable collection of objects illustrative of the native arts and industries, arms, armor, costumes, choice fabrics and jewelry; and Fort Rotterdam, a relic of the time of Portuguese supremacy and its capture by the Dutch. According to A. S. Walcott, many of the inhabitants of Macassar live in the outlying *kampongs* to the north and south of the city proper. The houses of the *kampongs*, Walcott says, vary in many details from those in Java. They are generally raised several feet above the ground on poles, have gabled roofs, shuttered windows, and considerable ornamentation in the way of carved woodwork. Continuing Walcott says: "The people of this southern end of Celebes are nearly all either Macassarese, or Bugis. They resemble the Japanese in face and figure, but are more sturdily built and are decidedly less polite and pleasing in bearing and manners. The Bugis are the seamen of the Archipelago, the greatest navigators and the most enterprising traders today and in times gone by the greatest pirates as well. All the people of the coast districts of southern Celebes are in religious proclivities *Mohametan-Animists-Mohametans*

in their profession of faith, Animists and fetish-worshippers in their practices." Macassar trades in coffee, rice, copra, trepang, spices, gum, rubber, pearls, mother-of-pearl, cocoa oil, maize, sandal wood and valuable timber. Pop. about 84,500. Consult Walcott, Arthur S., 'Java and Her Neighbors' (New York 1914).

**MACASSAR OIL**, the trade name for an unguent that made its appearance in England early in the 19th century, manufactured by one Rowland. It took its name from the district of Macassar, where it was first produced, being pressed from the fruit, or seed, of the *Schleichera trijuga*, the East Indian kusum tree. This fixed vegetable oil is used by the natives for cooking, illuminating and for medicinal purposes. The name is now given to a pomade made of almond, olive or peanut oil, to which other substances are added to give color and perfume. The original Macassar oil became so well known that Byron spoke of it as "Thine incomparable oil, Macassar," and Lewis Carroll alludes to it in the Song of the Man sitting on the Gate in 'Alice Through the Looking-glass'. So general was its use that in England a covering was specially made to throw over the back of a chair or sofa as a protection from the grease in the hair; and to these coverings the name Anti-macassar was given. Anti-macassars were at first made of white cotton in crochet-work. They were stiff, hard and uncomfortable; but in the third quarter of the 19th century they were simpler and were more artistically worked in colored wools or crewels, or colored silks in pretty patterns. The *Lady's Newspaper* (1852) describes anti-macassar materials as "crochet cotton," "pink and drab crochet twine," etc. *All the Year Round* (1879) "the anti-macassar on the arm chair"; and Miss Braddon's 'Vixen' (1879) "To sit alone by the fireside and work anti-macassars in crewel" shows that the word was still familiar in England to a comparatively recent period. In the United States the word "tidy" was used to describe the article.

**MACASSAR STRAIT**, Battle of, a naval engagement in which American and Dutch warships and planes opposed a Japanese armada of some 100 ships in the Strait of Macassar between Borneo and Celebes on 23 Jan. 1942. In the battle which raged for five days and nights, the Japanese lost over 30 ships, sunk or damaged, including one battleship and an aircraft carrier, and between 25,000 and 30,000 men drowned. Although Japanese losses were high, the battle proved to be principally an Allied delaying action, and in February of that year, Japanese forces again advanced on Java, established bases on both sides of Celebes, and occupied Amboina Island, second most important naval base in the Dutch East Indies, and Timor, north of Australia.

**MACAULAY**, ma-kâ'li, Catharine Sawbridge, English historian: b. Wye, Kent, 2 April 1731; d. Binfield, Berkshire, 22 June 1791. In 1760 she was married to George Macaulay, a London physician. She was an ardent Republican and a great admirer of Washington, with whom she corresponded, and whom she visited in 1785. She published a 'History of England from the Accession of James I to the Revolution' (8 vols., 1763-71), once very popular and eulogized by Pitt in the House of Commons, but now neglected.



**MACAULAY, James**, Scottish novelist: b. Edinburgh, 22 May 1817; d. there, 20 June 1902. He was educated at the University of Edinburgh and for 35 years was in the service of the Religious Tract Society as editor-in-chief. In 1851-57 he was joint editor of the *Literary Gazette* and in 1858 became editor of the *Leisure Hour Sunday at Home*. The *Boy's Own Paper* and *The Girl's Own Paper* were founded by him. He was a voluminous writer, and among his published works the following may be mentioned: 'Across the Ferry; First Impressions of America and its People' (1871); 'Memory Helps in British History' (1873); 'All True' Records of Adventure' (1879); 'Luther Anecdotes' (1883); 'Gordon Anecdotes' (1885); 'Livingstone Anecdotes' (1886); 'Wonderful Stories of Daring, Peril and Adventure' (1887); and 'Victoria, Her Life and Reign' (1887).

**MACAULAY, Sir James Buchanan**, Canadian jurist. b. Niagara, Ontario, 3 Dec 1793; d. Toronto, 26 Nov. 1859. He was an ensign in the British army during the War of 1812, and subsequently studying law was admitted to the bar in 1822. In 1829 he was appointed a judge of the King's Bench, from 1849 to 1856 he was chief justice of the Court of Common Pleas, and just prior to his death became judge of the Court of Error and Appeal. He was knighted in 1859.

**MACAULAY, Thomas Babington**, English essayist, historian and statesman. b. Rothley Temple, Leicestershire, 25 Oct 1800; d. Holly Lodge, Kensington, 28 Dec 1859.

Macaulay was the son of Zachary Macaulay, a Scotchman of remarkable character, who achieved distinction by his life-long advocacy of the abolition of slavery and by his efficiency, as a young man, in the governorship of Sierra Leone, the colony of African freedmen. The family removed to Clapham, then a suburb of London, where much of Macaulay's youth was spent. Hannah More was a friend of the family and she encouraged the lad as a writer and presented him with books to start his library. Young Macaulay was regarded as a prodigy, and his memory was something startling. He attended school near Cambridge under a Mr Preston; his range of reading, particularly in poetry and fiction, was immense, but his taste for mathematics and the exact sciences steadily declined. In October 1818 he entered Trinity College, Cambridge, and in the citadel of mathematics his aversion for this study became pronounced. Twice he gained the Chancellor's medal for poetry, and he displayed classical attainments, but was "gulphed" in mathematics. However, after a third trial, he won a Fellowship in 1824. His mental training was thus one-sided; and a certain lack of philosophical grasp and a dislike of facing abstruse intellectual problems became thus characteristic.

The association with his college mates, rather than his studies, left the deepest impression upon Macaulay. His great friend was Charles Austin, whose influence converted the young Tory into an uncompromising Whig. He shone in the Union Debating Society, developing powers that afterward became conspicuous in the House of Commons. Politics he had heard discussed from early childhood in the circles which gathered round his father's table,

and along with literature politics was his abiding passion. At college he had competed for a prize in history on the subject which he developed fuller in later years. "The Conduct and Character of William III."

Before leaving the university he began writing for publication in *Knight's Quarterly Magazine* (1823). Two lyrics, 'Ivry' and 'Naschy' still live; but the most important contribution was the ingenious 'Conversation between Mr Abraham Cowley and Mr. John Milton, touching the great Civil War'. It seems likely enough that the freshness and delicacy revealed in this early work became injured by the author's entrance into the rougher world of political strife. On the other hand, it may be maintained that Macaulay's gifts were pre-eminently those of the man in public life, and to him literature, always a delight, was nevertheless really but an avocation.

Macaulay's father unexpectedly became financially involved. Full of courage, the son began tutoring while still at Cambridge, and cheerfully assisted in supporting his sisters. Ultimately, together with his brother, he paid off all his father's obligations.

Macaulay was called to the bar in 1826 and joined the Northern circuit; but soon gave up the law for politics. Interestingly enough, his entrance into politics came by way of literature. In August 1825 appeared the essay on 'Milton,' the first of the series that Macaulay contributed to the *Edinburgh Review*, which, for the next 20 years, made both him and the *Review* famous. Jeffrey, the editor, expressed his frank wonder as to where Macaulay "picked up that style." Upon Jeffrey's resignation Macaulay was offered the editorship, but he was not willing to leave London. Papers on 'Machiavelli' (1827), 'Dryden,' 'History' and 'Hallam's Constitutional History' (1828), followed, and soon after controversial articles on James Mill, Sadler and Southey, which revealed the declared Whig. Their reputation introduced him into both social and political life. He was made commissioner of bankruptcy in 1828 and in 1830, Lord Lansdowne, who had been favorably impressed by the attack on Mill, offered Macaulay a seat in Parliament for Calne in Wiltshire which he held until in 1832 he was elected for Leeds.

His time of entrance into the House of Commons was propitious. It was just before the death of George IV and the accession of William IV, and consequently on the eve of the battle for the reforms of 1832. Macaulay was 30 years of age, was widely read in history and literature and was a ready and fluent speaker aflame with interest in public questions. In 1824 he had made a notable speech at a meeting of the Anti-Slavery Society; later, in the discussion for Catholic emancipation, he headed a coachload of M.A.'s from London to Cambridge, arriving in time to vote down a petition in the university senate against the act. He now threw himself ardently into the struggle for reform and took an honorable part in the fight from beginning to end. His Parliamentary success was immediate. "Whenever he rose to speak," Mr. Gladstone testified, "it was a summons like a trumpet-call to fill the benches." His earliest effort was on the removal of the civil disabilities of the Jews, which he followed by an essay on the subject in the

*Edinburgh Review* (January 1831). On the emancipation of slaves in the colonies he never wavered, but stood unflinchingly true to his father's principles. He offered to resign his position with the ministry rather than yield his views on this subject; but the question was satisfactorily settled and his resignation not accepted.

Meanwhile he found time to write. The essays on 'Byron,' 'Johnson' and 'Hampden' appeared in 1831; 'Burleigh' and 'Mirabeau,' in 1832; 'War of the Succession in Spain' and 'Horace Walpole,' in 1833, and the first essay on 'Chatham,' January 1834.

His appointment in 1832 as a commissioner of the Board of Control was followed by absorption in East Indian affairs, and in 1833, when the charter of the East India Company was renewed, he was offered a position on the East Indian Council with a salary of £10,000 per annum for five years. His brilliant career in Parliament was seemingly permanently endangered; but Macaulay did not hesitate. He estimated that he could save half his salary and in five years have a competence. He needed money on account of his father's poverty, for the sake of his two sisters, as well as for his own career; and he accepted, going out in 1834 and returning in 1838. The genius for government which the father had displayed at Sierra Leone, the son now manifested at Calcutta. His important permanent reforms were the creation of the Indian Penal Code and the Code for Criminal Procedure, achieved in the face of bitter local opposition, and the organization of a sound educational system.

Macaulay's family ties were very strong and there is no record of any love affair in his life. A sister, Jane, had died in 1830, and his mother in 1831. One of his favorite sisters, Margaret, was married in 1832, an occurrence which he accepted as a source of personal distress. The other, Hannah, accompanied him to India, and there she met and was shortly married to Charles Trevelyan, an officer in the government service. Macaulay was much pleased with the match, and the two households lived together under the same roof. Ever afterward, as the young Trevelyans, his nieces and nephews, grew up, they became a very real part of Macaulay's life. His love for children, and particularly for these, was a marked trait, and one of them afterward filially wrote his uncle's biography. Meanwhile his sister Margaret had died in England, and likewise his father died while Macaulay and the Trevelyans were on their homeward voyage. These deaths affected him deeply, and the home-coming was a sad one.

While in India he made opportunity for an immense amount of reading, particularly of the Latin and Greek classics, to which he returned with increasing delight. He also read widely in Italian and French, and did some German on the return voyage. His love for the great poets, dramatists, orators and historians affected his culture, his style and his ideals. The lists of his reading from now to the end of his life became a part of his biography and would stock a good library. His long walks with a copy of Homer or Virgil, from which he was reading or spouting, became an accustomed sight. Thenceforward he determined that he would write a history in emulation of Thucy-

dides and Tacitus and Livy, and his set speeches caught something of the spirit of Lysias and Cicero.

Upon his return to England he left for a tour in Italy, revelling in its beauties and associations with the enthusiasm of a first visit and the eye of an historian and student of Latin and Italian literatures. The literary fruits were the 'Lays of Ancient Rome.'

Returned home, he sincerely hoped to begin his 'History of England,' which he had planned to write from the Revolution of 1688 to the death of George III. Had he begun it then, with 20 years of life to devote to it, he might easily have left 10 or more volumes covering the century instead of the first five extending through but 15 years—a brilliant fragment. But he was again dragged into politics and Macvey Napier, editor of the *Edinburgh Review*, made heavy draughts upon his time.

In India he had contributed but two essays to the *Review*, that on 'Mackintosh's History' and the very long one on 'Bacon.' However, his experience furnished him the material for the brilliant narratives on 'Clive' (1840) and 'Warren Hastings' (1841). Besides these in the six years after his return he contributed 'Sir William Temple' (1838)—written in an entirely fresh spirit; 'Gladstone on Church and State' (1839); 'Von Ranke's History of the Popes' (1840); the 'Comic Dramatists of the Restoration' and 'Lord Holland' (1841); 'Frederick the Great' (1842); 'Mme. d'Arblay' and 'Addison' (1843); 'Barère' and the second essay on the 'Earl of Chatham' (1844). This, perhaps his noblest essay, proved to be his last. He was forced to give up writing in order to find time for his 'History.' His complaisance in continuing to write for the *Review* had undoubtedly worked to his detriment. But the entrance into politics was only in part due to the exigencies of his friends; for public life exercised a subtle fascination over him.

In 1839 he was elected member of Parliament for Edinburgh and was made Secretary at War with a seat in the Cabinet. Fortunately the ministry soon expired, and his freedom from official duties gave him some leisure. He retained, however, his seat for Edinburgh, and his most important work was the Copyright Bill, which, after many radical suggestions, passed in almost the exact terms in which he advocated it.

In 1842 the 'Lays' appeared and achieved a great success despite the natural fears of friends. "Christopher North" of *Blackwood's*, who had attacked Macaulay on account of the Southey reviews, made up—on poetry they could agree. In 1843 the 'Essays' were collected and published. There had been a constantly growing demand for them in a permanent form, which their author at first resisted. They had been written at odd moments of leisure, and he regarded them as ephemeral, but copies were being introduced from America, and Macaulay had to consent. The sale proved their popularity to be a permanent one. Macaulay's Essays still are unapproached of their kind, as condensed booklets of knowledge. An analysis of their contents shows how their author's mind was revolving constantly upon a definite period of English history—the Revolution and the consequent development under constitutional government, the subject he set

for himself in writing his 'History'—and these are uniformly among his best. Those on foreign subjects and the controversial ones are less satisfying.

The 'History' had been delayed year after year for lack of leisure to begin actual work. At length the first two volumes appeared in 1849. They comprised the reign of James II and the Revolution, but reproduced the setting as a whole and included details at once picturesque and dramatic such as could only be drawn by a supreme master of narrative. Macaulay had set for himself high ideals; he wished to be read and to be understood; he sought to give a series of brilliant mental pictures; and he achieved what he set out to do. He is weakest, perhaps, on the side of ethical interpretation, in searching out the causes and setting forth the nexus of events; his narrative is brilliant and effective, but it has the supreme fault in a history of being entirely lacking in detachment of view. In opinions he represented the great middle class and the world of Whiggism and its mode of thinking, in many things, Philistine; in some things, even vulgar; where mysticism and all esoteric systems of philosophy and kindred schools of poetry were accounted as foolishness.

The popularity of the 'History' was something enormous, surpassing even that of Byron's poems and of Scott's and Dickens' novels. In 1849, in consequence of this success, Macaulay was made rector of the University of Glasgow and Fellow of the Royal Society. He had been appointed trustee of the British Museum in 1847. He declined a professorship of history at Cambridge, and steadily refused positions under the government which would take up his time.

He had represented Edinburgh in Parliament for eight years, when in 1847, on account of his characteristic independence in voting for the Maynooth grant—for the maintenance of a Catholic university in Ireland—he offended many Edinburgh electors, and was not returned at the polls. He accepted his defeat with relief, and turned the more eagerly to the 'History.' In 1852, without any solicitation on his part and with a steady refusal to give pledges, he was returned voluntarily by the electors of Edinburgh to his former seat. Under such circumstances he felt he could not refuse election; but the duties it involved aided in sapping his strength, and that year he had a spell of illness from which he never wholly recovered.

In 1853 his speeches were collected and published. In 1855 the third and fourth volumes of his 'History' appeared. Macaulay feared for their success after the splendid reception accorded to the former two; but the new subject was the life and career of William of Orange, his favorite hero, he had worked hard to sustain himself and 26,500 copies were sold in 10 weeks. In 1856 he withdrew from the House of Commons; and in 1857 he was made a peer, and chose the title, Baron Macaulay of Rothley, from his birthplace. Likewise this year he was made a foreign member of the French Academy, member of the Prussian Order of Merit and high steward of Cambridge. In 1858 he wrote five short biographies for the eighth edition of the *Encyclopædia Britannica*—Atterbury, Bunyan, Goldsmith, Johnson and Pitt. These show greater compactness and maturity

in judgment than his earlier treatment of the same themes.

In 1856 he left his bachelor quarters in town, at The Albany, and leased a pleasant villa, Holly Lodge, Campden Hill, Kensington. In 1859 his brother-in-law, now Sir Charles Trevelyan, was appointed governor of Madras, and the thought of the separation bore heavily upon him. Fortunately his sister and the children remained behind a while longer. Macaulay had not been well for some time, and he died at Holly Lodge, 28 December. On 9 Jan. 1860, he was buried in Westminster Abbey in the Poets' Corner at the foot of Addison's statue.

A fifth volume of the 'History,' concluding the reign of William III, had been completed, was edited posthumously by Lady Trevelyan and appeared in 1861. See MACAULAY'S ESSAYS; LAYS OF ANCIENT ROME.

**Bibliography.**—The official life, written by George (afterward Sir George) Otto Trevelyan (his nephew), appeared in London in 1876, and is generally conceded to be one of the best biographies in the English language. Consult also Lord Avebury, 'Essays and Addresses' (London 1903); Bagehot, Walter, 'Literary Studies' (ib. 1879); Canning, 'Lord Macaulay and his History' (ib. 1822); Hughes, D. A., 'Thomas Babington Macaulay the Rhetorician: an Examination of his Structural Devices' (Ithaca, N. Y., 1898); Macgregor, D. H., 'Lord Macaulay' (London 1901); Viscount Morley, 'Critical Miscellanies' (ib. 1877); Morrison, J. Cotter, 'Macaulay' in the 'English Men of Letters' (ib. 1882); Spedding, 'Evenings with a Reviewer' (ib. 1881).

J. B. HENNEMAN,  
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**MACAULAY'S ESSAYS.** Macaulay did not originate the essay of literary and historical criticism. But Macaulay's essays so far surpass all others in brilliancy, style and solidity of matter that his name ranks with those of Bacon and Montaigne, each a master in his own special field. Macaulay's first published articles, written while he was still in residence at Cambridge University, appeared in Knight's *Quarterly Magazine* in 1823 and 1824, and from that time until his death in 1859 he wrote two score essays for the *Edinburgh Review* and many articles for the 'Encyclopædia Britannica.' The subjects he wrote upon were many—Dante, Dryden, Mill on Government, Mr. Robert Montgomery's poems, Moore's Life of Byron, Lord Bacon, Von Ranke, Leigh Hunt, Frederick the Great, Madame d'Arblay, Barère, etc., but by far the greater number deal with poets and men of letters or political personages in English history. Perhaps his most famous essays are those on Lord Clive, Warren Hastings and William Pitt, but others that deal with men of letters, Addison, for instance, or Samuel Johnson, are just as brilliant.

Macaulay's essays are set off by all the arts of rhetoric; they are ornamented by all the resources of omnivorous reading and a marvelous memory; they sparkle with a youthful enthusiasm, and are compact of sound information. In their own class they have no rivals. They are books to be taken on a long sea voyage, to be put on the shelf of a lonely ranchman, to be read and reread by all who have any taste for

literature. Pick up the essay on Addison and you are delighted with the tender sympathy of the critic who can set forth a good man's character in so generous and beautiful a manner. Read that on Croker's edition of 'Boswell's Johnson,' and you not only derive pleasure from Macaulay's admiration for Johnson, but you also get a lively idea of what the editor of a biography should not do. Take up any essay you please and you find knowledge, wit, sympathy, admiration; you are delighted to find with what extraordinary ease you acquire information, and how your horizon rapidly reaches out as if you were going up in a balloon, how places and things once so dark become enveloped in light as if the sun were rising, how great historical events seem to have been familiar to you from boyhood and how eminent personages, hitherto unknown, leap into your sudden intimacy.

Thus to delight, in form, and exhilarate the reader is a wonderful feat, and for nine men out of 10 Macaulay's essays are wholly satisfactory. They give a busy man what he wants to get from history and literature; but the 10th man finds himself not wholly satisfied. He feels oppressed by the arts of rhetoric. These animated pages, paragraphs, sentences that advance upon him, rank by rank, marshaled according to the most brilliant rules of tactics and strategy, trouble his spirit. Not a single sentence, here or there, appears in undress uniform. Such prose affords no room for subtleties. And the author's dogmatism rings in our ears like a trumpet in a room; this world of ours so full of perplexities, uncertainties, obscurities, cannot be truly expressed in opinions of absolute definiteness. History, literature, art, are not mathematics; a column of figures adds up the same for all; but William of Orange, James the Second, Archbishop Laud, Alexander Pope, Francis Bacon, must seem different to different people. We need, in literature, in history, light and shade, we need twilight and even night; high noon all the time is intolerable. It seems unlikely that all right views on English politics, during the 17th, 18th and 19th centuries, were embodied in the Whig creed, that all the good in religion is with the Protestants and none with Roman Catholics, that a comparative estimate of national characters summed up in the phrase "as the Italian is to the Englishman, as the Hindoo is to the Italian, as the Bengal is to other Hindoos," etc., should not need explanations and qualifications. And why should a historical writer, all the time, be giving his personages good or bad marks for conduct, like a village schoolmaster?

Such faults certainly exist. Macaulay had the temperament and the manner of an orator. He took, or rather he inherited, a view, he accepted it unquestioningly with enthusiasm, even with passion, he expressed that view in as absolute and as lucid a manner as possible. He had the method of an orator whose oration will be heard but once, and who must be positive in order to convince. This may be a merit in an advocate but it is a grave fault in a writer; and one would say that with such a fault it would be impossible for a man to be a great writer. But this very fault is proof of Macaulay's extraordinary talents; with his eloquence, with his immense fund of information, with his obvious honesty and his contagious enthusiasm, he is able to cover up and conceal what in any other writer would be fatal defects.

A man without doubts, without metaphysics, without high imagination, without dreams, cannot be one of the world's greatest writers; but Macaulay was a great English writer and occupies a place in which he not only has no rival, but no competitor who can be compared with him.

CARL E. EGGERT.

**MACAULAY, Trevelyan's Life of.** The authoritative biography of Thomas Babington Macaulay is the 'Life and Letters' by Sir George Otto Trevelyan. It is likely always to remain the chief source of information on account of the opportunity open to the biographer of knowing the subject thoroughly and of having free access to all available material. The writer is a nephew of Lord Macaulay, the son of Hannah More Macaulay, one of the historian's favorite sisters; from his earliest boyhood he knew his uncle intimately, and was 21 years old when Macaulay died in December 1859. Lady Trevelyan bequeathed to her son the task of writing his uncle's biography, a task that occupied many years, the completed work appearing in 1876.

The excellence of the work was recognized from the first. John Morley and William Ewart Gladstone approved it at once in extensive reviews, and succeeding years have detracted not at all from their judgments. Mr. Morley commended "the skill and candor with which Mr. Trevelyan has executed a very delicate and difficult task." Excellent and abundant materials and extensive knowledge do not necessarily ensure the production of a great biography. Nor do intimacy and strong affection; close relationship, indeed, is frequently the snare that prevents success. It is a tribute to Trevelyan's genius that he was not blinded by relationship or affection, nor overcome by the excess of material with which he had to deal. The biography exhibits careful selection. If now and then the loyal nephew is unable to see anything but good in the famous uncle, he nevertheless does not represent him as faultless; he admits that Macaulay had both limitations and prejudices. Trevelyan does not intrude himself unduly upon the narrative: he keeps our attention at all times chiefly upon Macaulay. Gladstone said that one of the greatest merits of Trevelyan's work is the fact that it has movement—life. And Gladstone was right. The biography is no lifeless transcript of facts; it is a characterization and an interpretation, possessing all the qualities of the best artistic work—proper perspective, proportion, gradation. The style is attractive and contributes much to the delight of reading.

Trevelyan adopted the method employed and established by Boswell, that of allowing the subject to tell, "as far as possible," his own story. The 'Life of Macaulay' is sometimes, to be sure, mentioned along with the 'Life of Johnson,' and there is no doubt that it has taken its place as one of the greatest English biographies. It is true, however, that with all of the advantages open to Trevelyan, he yet falls short of the success attained by Boswell. The 'Macaulay' contains no such record of conversation, no such variety of "exquisite personal touches," no such dramatic quality as the 'Johnson.' Neither does it so freely portray faults and foibles. Falling somewhat short of the 'Life of Johnson' in sheer artistry, it surpasses Lockhart's 'Life of Scott' in movement and concen-

tration. Morley was giving high yet just praise when he expressed the belief that this 'Life of Macaulay' would be read throughout the world with a curiosity and an interest only to be surpassed by the success of Lord Macaulay's own writings. Consult the review of the 'Life' by John Morley (in the *Edinburgh Review*, Vol. 143); and that by Gladstone (in the *Quarterly Review*, Vol. 142).

WALDO H. DUNN.

**McAULEY, Catherine**, Irish founder and first superior of the Sisters of Mercy b. St. James's Mount House, County Dublin, Ireland, 29 Sept. 1787; d. Dublin, 11 Nov. 1841. In childhood she was adopted by a wealthy Protestant family who allowed her to remain in the church of her father, the Roman Catholic, and left her a large fortune which she wished to use for the benefit of the poor. She first erected a commodious house wherein might be taught a number of poor children, and where homeless young women might find lodging and board. This institution was opened in Dublin, 24 Sept. 1827, but the religious order was not established until 12 Dec. 1831. The members of the order take the vows of poverty, chastity and obedience; and the works which they perform are visiting the poor, sick and imprisoned, teaching, establishing hospitals, orphanages, homes for the friendless and other works of mercy. There are houses of her order in nearly all parts of the world. In the United States it comprises over 4,700 members. The order includes a college for young women, at Mount Washington, Md., a large number of academies, high and elementary schools and hospitals and orphanages in nearly every State in the Union. Consult Hartnett, 'Mémorial of Mother McAuley'; Murphy, 'Sketches of Irish Nunneries'; Member of Order of Mercy, 'Life of Catherine McAuley.' See MERCY, SISTERS OF.

**McAULEY, m'ka'li, "Jerry,"** New York City missionary: b. Ireland, in 1839, d. New York City, 18 Sept. 1884. He came to New York in 1852 and became a thief and prize-fighter. In 1857 he was sent to Sing Sing prison on a false charge of highway robbery, but was pardoned in 1864. He returned to his evil life. In 1872, having reformed, he opened a mission, "The Helping Hand," in Water street, a criminal neighborhood in New York. In 1882 he opened another mission, "The Jerry McAuley Cremorne Mission" and in 1883 began the publication of *Jerry McAuley's Newspaper*. He appealed with the greatest success to outcasts considered beyond redemption. After his death the work was continued by Samuel H. Hadley and John H. Wyburn. In 1912 a modern sanitary building was erected on the site of the first mission in Water street. Consult 'Jerry McAuley: his Life and Work,' autobiography edited by the Rev. Robert M. Offord (New York 1885).

**MACAW, mā'ka',** name given to 15 or more species of large, long-tailed and strong-flying parrots of gaudy coloring. They belong to the genus *Ara*, and are natives of the Western Hemisphere. They live on the mainland of America from Mexico to Paraguay, being especially abundant in Bolivia, where no fewer than seven (or nearly one-half) are found. They are also in Colombia and in Cuba. In the true macaws (*Ara*) the bony orbital ring is complete and the lores (space between the eye

and the upper mandible) and, to a greater or less extent, the cheeks are naked. One of the handsomest and best known is the Blue and Yellow Macaw (*Ara ararauna*), which enjoys an extensive range in South America from Guiana in the east to Colombia in the west and from Panama to Bolivia. A little over 30 inches long it has the upper parts blue, the forehead olive-green and the ear-coverts, sides of neck, breast and abdomen yellow-orange, while the wings and long tail are blue above and golden olive-yellow below. This bird is seen in almost every zoological garden and is often kept in private houses. It possesses a fairly good temper and grows much attached to those who tend it, but, like all other macaws, it persists in violent screaming. Salmon-fishers use its feathers for the making of artificial flies. Larger and even more gorgeously plumaged is the great Red and Blue Macaw (*Ara macao*), which is mainly scarlet-red both above and below, but with the back and upper and lower tail coverts pale blue, as are the wing-quills, while the shoulders and greater coverts are chrome yellow. The tail feathers are scarlet, the two central ones scarcely tipped with blue, the blue tips increasing in extent on the outer feathers, the three outermost being almost exclusively blue. The home of the Red and Blue Macaw extends from Mexico, through Central America, to Bolivia, Guiana and the Amazon Valley. It is usually seen in pairs, or in companies of pairs. It is also a common bird in captivity. The Red and Green Macaw (*Ara chloroptera*), ranging from Panama to Brazil, has a shorter tail than the other two and is not so frequently met with in zoological gardens. It does not extend north of Panama. It differs from the Red and Blue in being of a darker red, or crimson, and having the middle wing coverts olive-green instead of yellow. The Green Macaw (*Ara militaris*) is green throughout, except for the presence of a scarlet patch on the forehead and blue on back, rump, wings and tail. It is 27 inches long and ranges from Mexico to Peru and Bolivia,—the most northern of all in distribution. It is well known in captivity. Colonel Grayson and other writers explain that this macaw is called "guacamayo" by the natives of Mexico and Central America, because they believe that it descends to the ground only once a year, and this in the month of May, when it searches the ground for a very hard-shelled palm-nut of which it is fond. This rather surprising statement is probably substantially true, as there seems no other reason why it should ever alight on the ground, where it would be exposed to much more danger than in the tree-tops, where it finds abundant food the year round. The tree of this nut the Mexicans call *Ava*, a species of *Nuxvomica*. Both the milky sap of the tree, as well as the fruit, are deadly poison to any other creature but this parrot. The shell is exceedingly hard, but the enormous bill and powerful jaws of the Guacamayo enables it to split the nut with ease. When migrating to some distance these birds pass at a great height, flying in pairs and uttering harsh and discordant cries.

The Hyacinthine Macaw (*Ara hyacinthus*) of the central provinces of Brazil is a splendid bird. It is about three feet long, the plumage being nearly uniform cobalt blue, relieved by



bright yellow skin about the eyes and at the base of the lower mandible and a black bill which is of enormous size. This appears to be a rare species, occurring, according to Riker, about the inland ponds in the dense forests of the interior, where it feeds chiefly upon the fruit of a palm peculiar to these localities. Some of these palm fruits are of extraordinary hardness, but these birds crush them to pulp by their bills. The nesting habits of the Hyacinthine differ from those of other macaws in that they excavate a hole in the river bank for their nest instead of placing it in a hollow tree. In Spixi Macaw (*Cynopsittacus Spixi*), of the province of Bahia, Brazil, the lores are naked and the general color also blue; but parts of the head are more or less grayish.

All macaws live well in captivity and are often kept chained to a perch. Few persons are acquainted with their strong, wonderful and graceful flight. They all scream harshly. They are gregarious and apparently monogamous, and lay two lustreless white eggs in nests in hollow trees. One of their characteristics is a long and graduated tail with the individual feathers tapering to a point and the middle pair always the longest. The bill is powerful and usually deeper than long. Consult Greene, William Thomas, 'Parrots in Captivity,' with notes (3 vols., London 1884-87); id., 'Parrots in Captivity,' colored illustration (London 1884); Lear, Edward, 'Illustrations of the Family of Psittacidae, or Parrots' (folio, London 1832); Page, Charles N., 'Parrots and Other Talking Birds, their Foods, Care and Training' (Des Moines 1906).

**MACAW TREE** (*Acrocomia sclerocarpa*), a palm of the same family as the cocoanut. It is a native of the West Indies and of the warm parts of America. It grows from 20 to 30 feet high with pinnated leaves from 10 to 15 feet long. The fruit yields oil of a yellowish hue, sweetish taste and with an odor like violets. This oil is about the consistency of butter. In the native regions of the tree the inhabitants use this oil as an emollient for affections of the joints. It is extensively imported and is used in the manufacture of toilet soaps as palm oil. The leaves yield a fine, soft fibre. In Guiana the tree is called *Macoya*, in Brazil it is called *Macahuba*, in Jamaica *Grugru*. In southern California this palm is cultivated as an ornamental tree.

**MACAYO**, mã-si-ô, Brazil. See MACEIO.

**MACBETH**, or **MACBETHAD**, Mac-Finlegh, king of Scotland, who reigned from 1040 to 1057. The facts of his life, so far as known, are these. During the reign of Duncan he was "mormaer" of Moray by inheritance, and by his marriage with Gruoch, granddaughter of Kenneth IV. Duncan, in his attempt to subdue the independent chiefs of the north, was defeated in a battle with the Earl of Orkney and Shetland at Burghead, near Elgin in 1040; but was murdered at Pitgaveny, nine miles from the battlefield, by Macbeth, his general. By this means Macbeth became king, and, according to accounts, his reign was fairly successful. He was finally defeated in battle and slain by Malcolm Ceanmor, son of the murdered Duncan, at Lumphanan, Aberdeen (1057). The legends which gradually gathered round the name of Macbeth were collected by John of

Fordun and Hector Boece, reproduced by Holinshed in his 'Chronicle' (1577) and made use of by Shakespeare for his great tragedy. These writers appear to have overlooked the excellent qualities of Macbeth as king, and regarded him with horror as a usurper. Consult Robertson, 'Scotland under her Early Kings' (1862); Skene, 'Celtic Scotland' (1876-80), and Rhys, E., 'Celtic Britain' (3d ed., London 1904).

**MACBETH.** This play was not published until 1623, though it was probably written several years before Shakespeare's death. A reference to it in 1610 by Dr. Simon Forman, the probable reference to the accession of James the First (1603) that brought about the union of two crowns, and the proportion of rhyme, blank verse and prose, point to 1605-06 as the probable date. Because of its late publication the text is one of the most corrupt of Shakespeare's plays. It may have been taken down from the play as acted, or it may be a transcript of the author's manuscript which was in great part not copied from the original but written to dictation. Act 1, scene 2, and part of scene 3 may be an interpolation, but the Porter Scene, which was long considered to be the work of a collaborator, is now justified by reason of its dramatic contrast with the preceding scene and by the amazing felicity of such lines as, "go the primrose way to the everlasting bonfire." With the exception of a few lines and scenes Macbeth is an example of amazing concentration—it has neither underplot, nor, with the exception of the Porter Scene, such comic scenes as are found in nearly all of the other tragedies of Shakespeare. It is shorter by some thousand lines than any other tragedy and moves along with the swiftness of a tempest. The 20 years of history become nine days of dramatic time, and so swift is the passage of time that it seems but a few hours.

Shakespeare was indebted for the main events of the play to Holinshed's 'Chronicles of Scotland.' The character and the story of Macbeth, partly historical and partly legendary, were drawn largely from this source, but the witches were the creation of Shakespeare's genius from the shadowy creatures of a crude folklore. There is just enough of the popular conception of supernatural creatures of evil to satisfy the demands of the age in which he lived, but he informed this popular and somewhat vulgar superstition with a moral significance suited to all ages alike. These invisible, unearthly creatures do not create the evil in Macbeth's mind; they only serve to bring into life-like reality the evil that is already there. They are an embodiment of the same forces as the thunder, lightning, rain—nature "red in tooth and claw"—that constitute the background for the evil forces that are at play in this drama. While the minor characters of the play, and especially Banquo, are adequately presented, the interest centres in Macbeth and Lady Macbeth, who while engaged in the same evil deeds yet reveal differences of temperament and character that afford the most significant dramatic contrasts. Lady Macbeth before the murder of Duncan displays firm, sharp, wiry, matter-of-fact intellect and energy of will; she becomes for the time being possessed by one thought, one ambition. She has no imagination to represent

for her the inevitable consequences of the murder. As soon, however, as the deed is done, her womanly nature asserts itself; her amazing self-control gives way, and remorse wells up in her conscience-tortured heart. She had denied the quality of her sex, only to find that the woman was stronger than the queen or the wife. Macbeth, on the other hand, is possessed from the beginning by a vivid imagination that visualizes the deed itself and falters at its contemplation. Deeper and deeper he plunges into guilt until a sort of world-weariness and sick despair settle upon his brooding spirit. In words as eloquent as Shakespeare ever wrote he pronounces a requiem upon his wife and summarizes his pessimistic indictment of old age and of life; life is to him but "a tale told by an idiot, full of sound and fury, signifying nothing." He dies with the harness on his back, the intrepid soldier that he has always been, but with a sigh that pierces to the depths.

EDWIN MIMS

**McBRIDE**, māk-brid, Sir Richard, Canadian statesman: b. New Westminster, British Columbia, 15 Dec. 1870, where his father held office; d. England, 1917. He was educated at Dalhousie University, Halifax, Nova Scotia, graduating in 1890, called to the bar in 1892, he practised his profession in Victoria. Entering politics he was elected in 1898 a Conservative of the provincial legislature. In 1900-01 he was Minister of Mines in the Provincial Ministry; in 1902-03 a leader of the Conservative opposition; in 1903 Premier and Minister of Mines; in 1906 a delegate to the Interprovincial Conference at Ottawa; and in 1907 a delegate to the Colonial Conference at London (England). In 1912 he was knighted. Consult Gregg, T. A., 'Richard McBride,' with portrait, *Canadian Magazine* (July 1904).

**MACBRIDE**, Thomas Huston, American educator and botanist: b. Rogersville, Tenn., 31 July 1848. After graduation at Monmouth College in 1869 he taught mathematics and modern languages at Lenox College from 1870 till 1878, in which year he became assistant professor of natural sciences. In 1884 he was made professor of botany and held this post until 1914 when he became president. From 1916 he was president emeritus. His specialty was fungi. Dr. Macbride had many degrees. Monmouth gave him A.M. in 1873, the University of Bonn the same in 1891; Lenox gave him Ph.D. in 1895; Monmouth that of LL.D. in 1914, and Coe the same in 1915. He was a member of many scientific societies, of the American Forestry Association, Iowa Park and Forestry Association and of the Society of Botanists of the Central States. He was also a Fellow of the Botanical Society of America. He published many of his lectures and addresses, contributed to the *Popular Science Monthly*, *Science*, etc., and was the author of a textbook on 'Botany' (1895) and 'North American Slime Moulds' (1899). He died 27 March 1934.

**McBURNAY**, māk-bēr'nī, Charles, American surgeon: b. Roxbury, Mass., 17 Feb. 1845; d. 1913. He was graduated at Harvard in 1866; and from the Columbia Medical School in 1870, and thereafter practised his profession in New York. He was professor of surgery in the College of Physicians and Surgeons, New York, and was visiting and consulting surgeon

at Saint Luke's, the Presbyterian, Roosevelt, New York Orthopedic and other hospitals. He became widely known as a very skilful operative surgeon, and was Fellow or member of many medical societies of this country and Europe. He discovered "McBurney's point," which is pathognomonic of appendicitis. He was a world-wide authority on appendicitis. When President McKinley was shot, Dr. McBurney was summoned to Buffalo as consulting surgeon. He was a great teacher as well as a great surgeon.

**McBURNAY**, Robert Raikes, American religious worker: b. Castleblaney, Ireland, 31 March 1837; d. Clifton Springs, N. Y., 27 Dec. 1898. He came to the United States in 1854, and from 1862 was the general secretary of the New York Young Men's Christian Association. He was devoted to his work, and with the progress of years came to be recognized as the leading Y. M. C. A. secretary in the world.

**McCABE**, ma-kāb', Charles Cardwell, American Methodist bishop: b. Athens, Ohio, 11 Oct. 1836; d. New York, 19 Dec. 1906. He was educated at Ohio Wesleyan University. In 1860 he entered the Methodist Episcopal ministry, and in 1862 was appointed chaplain of the 122d Ohio Infantry. At the battle of Winchester he was captured, and held in Libby prison for four months, and soon after his release entered the service of the United States Christian Commission and succeeded in raising a large amount of money for its work. Later he became financial agent for Wesleyan University; and in 1884 was made secretary of the Methodist Episcopal Missionary Society. He was remarkably successful in raising large amounts of money for missionary purposes. He became a bishop of his Church in 1896, and in December 1902 was elected chancellor of the American University at Washington, D. C.

**McCABE**, James Dabney, American author: b. Richmond, Va., 30 July 1842; d. Germantown, Pa., 27 Jan. 1883. He was the son of James Dabney McCabe (1808-75), a Protestant Episcopal clergyman and writer, and was educated at the Virginia Military Institute. He began to write very early. At the beginning of the Civil War he published a pamphlet entitled 'Fanaticism and its Results, by A. Southerner' (Richmond 1860) and throughout the war he employed his pen effectively in the cause of the Confederates. Three martial plays were performed in Richmond in 1862-63 and his war-story, 'The Aide-de-Camp,' was issued in 1863. In 1863 he published a Christmas compilation called 'The Bohemian' and in 1863-64 edited *The Magnolia Weekly*. His war-poems were very popular, particularly 'The Sword of Harry Lee.' He wrote several biographies, including 'Life of Gen. Thomas J. Jackson' (Richmond 1863); 'Mémorial of Gen. Albert S. Johnston' (1866); and 'Life and Campaigns of Gen. Robert E. Lee' (New York 1867). His other works are 'Planting the Wilderness' (Boston 1869); 'History of the Late War between Germany and France' (1871); 'Lights and Shadows of New York Life' (New York 1872); 'History of the Grange Movement,' published under the name of Edward Winslow Martin (Chicago 1874); 'Paris by Sunlight and Gaslight' (Philadelphia 1875); 'Centennial History of the United

States' (Philadelphia 1875); 'Pathways of the Holy Land' (1877); 'History of the Turko-Russian War' (1879); 'Our Young Folks Abroad' (Philadelphia 1881), and 'Our Young Folks in Africa' (1882). Besides these he was the author of several hundreds of short stories, essays and translations, and made a compilation of the romance and humor of the war called 'The Grayjackets' (1867).

**MCCABE, Joseph**, British rationalist: b. England, 1867. He was educated at Saint Francis's, Manchester, at Saint Anthony's, Forest Gate and at the University of Louvain. In 1883 he became a Franciscan, was ordained a priest in 1890 and in 1895 became rector of Buckingham College. In 1896 he left the Roman Catholic Church and became a lecturer and writer on rationalistic subjects. His books include 'Twelve Years in a Monastery' (London 1897); 'Modern Rationalism' (1897); 'Abelard' (1901); 'Saint Augustine and his Age' (1902); 'Talleyrand' (1906); 'The Martyrdom of Ferrer' (1909); 'The Decay of the Church of Rome' (1909); 'The Evolution of Mind' (1910); 'The Empresses of Rome' (1911); 'The Story of Evolution' (1912); 'Goethe' (1912); 'The Emperors of Constantinople' (1913); 'A Candid History of the Jesuits' (1913); 'The Sources of the Morality of the Gospels' (1914). George 'Bernard Shaw' (1914), 'The Soul of Europe' (1915); 'The Kaiser' (1915); 'Crises in the History of the Papacy' (1916); 'The Romance of the Romanoffs' (1917); 'The Popes and Their Church' (1918); 'A, B, C of Evolution' (1921); 'Ice Ages' (1922); 'A Century of Stupendous Progress' (1925); 'Lourdes' (1925); '40 Big Blue Books' (1927); 'The Story of the Catholic Church' (1929). Chesterton devotes a chapter to him in 'Heretics' (1909).

**MACCABEES**, a famous family which battled for liberty in the 2d century B.C., when the Jews were persecuted by the Syrians under Antiochus IV, Epiphanes. Originally applied to Judas, the third son of the aged priest Mattathias, who began the revolt, the name was widened to include the family of Judas and his followers, in due course to be applied to all wrestlers for freedom in the Greek period of Jewish history. The word's origin has received various fanciful explanations, but the most probable etymology is from the Aramaic *maqquaba* (Judges iv, 21 and elsewhere) meaning "Hammer."

The story of the Maccabean struggle belongs to the history of heroism in all ages. When Antiochus of Syria (175-164 B.C.) strove to impose Hellenism in its crassest form upon the Jews under his sway and Jerusalem was overrun, while pagan rites were ordered to be substituted for Jewish, a sacrifice to Zeus being offered (168) on the Temple altar, an aged priest at Modin, Mattathias, spurned the mandate, killed the royal messenger, and destroyed the altar. Then escaping with his five sons to the mountains, he raised the standard of revolt. Two years later he died, and Judas, the third son, was acclaimed leader. His skill and genius, joined to a religious fervor that was the secret of his strength, cleared away every obstacle, as he defeated in rapid succession the three Syrian generals, Apollonius, Seron and Gorgias, and later the regent, Lysias. In 165 he

reconsecrated the Temple amid the exultation of the people—the festival of Hannukkah, in memory of this restoration is still observed by the Jews of every land. In 162 Lysias granted religious freedom but Judas resolved to fight on until political liberty was also attained. A year later he defeated Nicanor at Adasa, but shortly afterward he fell at Elasa, while resisting Bacchides with greatly superior forces.

The command was now assumed by his brother Jonathan, who was astute enough to secure the favor of the Syrian ruler and was made high priest (153). For a time he fought for Antiochus VI, who owed his crown to Tryphon, and succeeded so well as to awaken Tryphon's jealousy. He fell into his power at Ptolemais and was finally put to death (143). Simon, the last surviving son of Mattathias, became leader of the Jewish people. By his ability and force of character, he outwitted Tryphon and secured the independence of Judaea. In 141 he was appointed by the people hereditary leader and high priest. With him began properly the Hasmonean dynasty—the name being traced to an ancestor of the house Asamonaos (Josephus, *Antiq* xii, 6); according to Wellhausen (*Phar und Sadd* x, Note 94) he was the grandfather of Mattathias. The first year of his reign marked the beginning of a new era (Seleucid year 170 = 143-142 B.C.). The country enjoyed much prosperity, its resources were greatly developed and the outlook was distinctly more favorable than at any previous period since the Exile. With a change of rulers in Syria, Antiochus (VII) Sidetes becoming king, Simon and two of his sons were murdered by his son-in-law who wished to curry favor with the new monarch. But the third son, John Hyrcan, escaped and succeeded to the throne, reigning 30 years with much ability. Partisan strife, however, disturbed the kingdom's peace and weakened its strength, with the constant clashing of Pharisees and Sadducees.

On the death of John Hyrcan (105), his son Aristobulus reigned for a year when his brother Alexander Jannæus became ruler (104-78), a man of considerable energy, in his persistent conflicts to extend and defend his realm. His sympathies were with the Sadducees, and once when officiating as high priest, some of the Pharisees in their anger threw at him and the attending Sadducees citrons which had been supplied for the Feast of Tabernacles. As punishment, he attacked them with his troops, killing 6,000. On his death his widow, Salome Alexandra, ruled (78-69), reversing his policy and making the Pharisees her favorites, the land enjoying peace and prosperous growth. Her eldest son, Hyrcan II, who lacked capacity, was made high priest. The younger, Aristobulus, stronger and abler, coveted the succession and organized an army to conquer Jerusalem, when Alexandra died and Hyrcan was willing to retire in his brother's favor.

At this moment a new factor appeared in the person of Antipater of Idumæa who sought to further his own designs. An appeal to Rome was made. Pompey resolved to settle the matter in his own fashion, at some slight which Aristobulus offered, entered Jerusalem and made Hyrcan II high priest and ethnarch, while his brother was carried a captive to Rome. And now the Roman yoke became firmly fastened. Antipater was made procurator in 47, with his



sons Phasael and Herod governors of Jerusalem and Galilee. In 41 they became tetrarchs of Judæa. In 40, Antigonus, the sole surviving son of Aristobulus, was appointed king by the Parthians, in the swift changes of the day. But Herod who had escaped from prison, while his brother had committed suicide, was given the throne by the Romans (37 B.C.). In the same year Antigonus was put to death by Mark Antony and the Maccabean-Hasmonean dynasty ended.

**Bibliography.**—Curtiss, 'The Name Maccabee' (Leipzig 1876); Henderson, F., 'The Age of the Maccabees' (1898); Morrison, 'The Jews under Roman Rule'; Streaues, 'The Age of the Maccabees'; Weiss, 'Judas Makkabeus' (1897). Consult modern histories of the Jews, Grætz, Schurer, etc.

ABRAM S. ISAACS

**MACCABEES**, Book of the, a name given to several Apocryphal books of the Old Testament. Of the four or five thus termed, two were declared canonical by the Council of Trent (1546), are contained in the Vulgate, and among the Apocrypha of the English Bible. The three other books may be summarized. Book III is found in the Septuagint but not in the Vulgate, Book IV is included in some manuscripts of the Septuagint and of Josephus. Book V is merely a Syriac reproduction of the sixth book of Josephus' 'Jewish War' and is of no historical value.

*First Book* was the record of 40 years from the accession of Antiochus (175 B.C.) to the death of Simon (135 B.C.), and is composed after the model of the Old Testament historical style, terse, simple, and at times poetic and impassioned. The narrative is written with due proportion and in sympathetic tone. All events are dated in terms of the Seleucid era. It is generally admitted that the original was in a Semitic language, most probably Hebrew, to which both Origen and Jerome bear testimony. However, it is not impossible that they were acquainted with an Aramaic version or paraphrase. The Greek translation of the Hebrew was made at an early date and has alone survived. It bears all the marks of a literal translation, preserving the Semitic and at times the Hebrew idiom. The author, to judge from the book itself, was a pious and patriotic Jew: a Palestinian, to infer from his evident familiarity with the Holy Land and his want of knowledge as to the foreign lands mentioned. An admirer of the Maccabees and their military skill, he shows the influences of his day by omitting the words "God" and "Lord" as in the book of Esther, substituting "He" and "Heaven." Owing to his omission of the disloyal priests, Jason and Menelaus, in striking contrast to the attitude of the Second Book, Geiger claims a Sadducee as its author, a view held by later authorities, even if Geiger's views as to its being a partisan document are not upheld. Opinions differ as to its precise date—Schürer tracing it to the first or second decade of the 1st century B.C., while Torrey dates it early, in the reign of Simon, a little after 135 B.C. The book is one of the most vivid and valuable sources extant for Jewish history.

*Second Book*, has a peculiar opening—two letters written by Jews of Palestine to brethren in Egypt, held by some to be spurious. The

work itself, an abridgment of five books written by Jason of Cyrene, covers Jewish history from a period a year earlier (176 B.C.) than its predecessor to the death of Nicanor (161 B.C.). It is of special interest as picturing the situations in Palestine before the revolt of Mattathias and furnishing other data that are lacking in the First Book. The author, probably a Hellenistic Jew, writes largely from the religious point of view, is a Pharisee, with a direct partisan tendency. Greek was the original language. Its exact or approximate date cannot be fixed. Among its characteristics are allusions to angels and spirits, to resurrection and immortality—that the book concludes with the victory of Judas over Nicanor, indicates its aim—to arouse the Jew to observe the two Maccabean feasts, that of Dedication and of Nicanor. The incident of the mother and her seven sons, and other stories of martyrdom have given the book a value and power of its own, which appealed with special force to the Christians of the first four centuries, as Bevan states in his 'House of Seleucus' (1902, II 175).

*Third Book* describes the escape of the Jews from martyrdom in Alexandria in the reign of Ptolemy IV, Philopator (222-204 B.C.). It has no relation to the Maccabees, but doubtless its title was given later when all who suffered for the olden faith were called by that name. It was written by an Alexandrian Jew to give courage and endurance to his brethren in Egypt. In view of the fact that early Jewish settlements in the Fajum have been discovered. Both I. Abrahams and A. Büchler claim the book has distinct reference to a persecution in the Fajum—a theory that is disputed.

*Fourth Book* has been aptly described by Freudenthal (Breslau 1869) as a homily delivered probably on the Feast of Dedication to a Greek-speaking Jewish community. It is sermon not history, to prove how the passions can be controlled by the reason, by which term he means reason enlightened by religion and the Mosaic Law. This thesis is illustrated by many examples, notably from the Maccabean struggle. A Hellenist to a certain extent, he was nevertheless an earnest, loyal Jew, eloquent and convincing. His precise date is unknown. He supplied the model for similar homilies by Christian writers in the early centuries, with their thrilling martyrdoms. In the Church the book was attributed to Josephus and added to his writings, with whose style and language it is wholly incompatible.

Without historical value is the so-called *Fifth Book* which Cotton gives in his 'Five Books of the Maccabees' (1832), and known also as the Arabic 'Book of Maccabees' which claims to be the history of the Jews from 186 B.C. to the end of Herod's reign, but which in reality is nothing but a compilation from First and Second Books of Maccabees and Josephus. The manuscript of a 'Fifth Book' which Sixtus Senensis (1566) states that he saw in Lyons and which was subsequently lost by fire, is characterized by Schürer as a "reproduction of Josephus, the style being changed for a purpose."

**Bibliography.**—Abrahams, I., 'J. Q. R.' (1896-97, IX, 39); Büchler, A., 'Tobiaden and

Oniaden' (Vienna 1899); Fairweather and Black, 'First Book of Macc. in Cambridge Bible Texts'; Grimm in 'Handbuch zu den Apokryphen'; Kacutzsch, 'Apokryphen'; Schurer, 'History of the Jewish People'

ABRAM S. ISAACS.

**MACCABEES, Knights of the Modern.** See **MACCABEES, THE.**

**MACCABEES, The Ladies of the,** a fraternal beneficiary association, founded in 1886, formerly the Ladies of the Modern Maccabees. Until 1914 it formed a species of auxiliary organization to the Knights of the Maccabees and the latter exercised over it a kind of guardianship. It has about 50,000 members and since its institution has distributed about \$7,000,000 in benefits and insurance.

**MACCABEES, Ladies of the Modern.** See **LADIES OF THE MACCABEES.**

**MACCABEES, The,** a fraternal beneficiary association having its general offices, at the present time, in the Maccabees Building, a 15-story structure on Woodward Avenue at the Art Center in the city of Detroit, Michigan. The former title of The Maccabees was the «Knights of the Maccabees of the World,» which was changed in 1914 to the simple title «The Maccabees.»

The society was organized in the city of London, Ontario, Canada, on 20 Aug. 1878, by W. D. McLaughlan and a few other interested men. The association grew rapidly, and its subordinate lodges sprang up all over the Canadian provinces and in the states of New York and Michigan. In 1914 it united with the Knights of the Modern Maccabees, which was the original organization. In 1926 the Ladies of the Modern Maccabees also united with the association, and in 1924 the society broadened its sphere of operation by the organization of a Ladies and Junior Department, so that it has now become a family protective institution.

The association derives its name from the ancient Maccabees, a chivalrous and religious people whose history is given in the writings of the Old Testament. The leading character in the history of the ancient Maccabees was Judas Maccabeus, considered one of the most valiant soldiers and one of the greatest military leaders of all time. During the wars in which the Maccabees were engaged and in which he was their leader, he required that a portion of the fruits of all their victories should be set aside for the benefit of the widows, the orphans, the disabled, and the dependents of those who had fallen in battle. It was this particular practice and characteristic that probably suggested to Mr. McLaughlan and his co-workers the name for the new society, for this practice characterizes The Maccabees of the present day.

The organization takes applicants from the day of birth up to their 60th anniversary, and it affords all kinds and character of legal reserve life insurance, hospitalization protection, old-age homes, visiting nurse service, and general relief service to its members under all the adversities of life. The main purpose of the association is to provide social and fraternal intercourse for its members, and benefits in the way of life insurance to the families of its deceased members.

The association has, during its entire history, paid in death benefits more than \$230,000,000,

and it has paid in old-age benefits and general relief benefits under its certificates in excess of \$30,000,000. It has a large sick and accident department. The present assets of the association are in excess of \$56,000,000, and it possesses a membership of 250,000. It works under the lodge system and ritualistic ceremonies, and its form of government is thoroughly democratic, every member having a voice in the conduct of its affairs, in the making of its laws, the election of its officers, and the fixing of their compensation through representatives chosen by the direct voice of the members. The general meeting of the law-making body (The Supreme Tent as it is called), is held once quadrennially. In the interim between the meetings of its governing body, its affairs are administered by a board of nine trustees, consisting of the Supreme Commander and eight others elected by the Supreme Tent.

One of the safeguards of the organization is its laws, providing that all investments must be made in municipal, state, provincial, and governmental bonds, or real estate including homes and only such real estate as has an earning capacity. The loans do not exceed 50 per cent of the appraised value of such property.

E. W. THOMPSON,  
*Supreme Commander.*

**MACCABEES, The Woman's Benefit Association of the,** an adequate rate fraternal order for women with headquarters at Port Huron, Mich. Organized in 1892, as the Ladies of the Maccabees of the World, reorganized under its present name in 1915 and established in the United States and Canada, the order has 3,000 local bodies with 192,000 members and a reserve fund of \$12,000,000; provides whole life, term and disability protection; 20-year plans; junior protection for children of members; sick, last illness and burial; and maternity benefits. It maintains a free hospital service in every state for needy sick.

**McCALL, Edward Everett,** American jurist: b. Albany, N. Y. 6 Jan 1863; d. New York City, 12 March 1924. He was educated at the Albany High School and the New York University, was admitted to the bar in 1884 and practised in New York from 1884 till 1902. From that year until 1913 he was justice of the Supreme Court of New York (1st district) and Democratic candidate for mayor of New York in 1913, but was defeated by the late John Purroy Mitchel (q.v.).

**McCALL, ma-kâl', George Archibald,** American soldier: b. Philadelphia, 16 March 1802; d. 25 Feb. 1868. He was graduated at West Point in 1822; in 1836 reached the rank of captain, and that of colonel in 1850. Having served against the Seminoles in Florida, he won distinction in the Mexican War; in 1850 he became inspector-general, resigning from the army three years later. In 1861 he was given command of the Pennsylvania Reserves, with the rank of brigadier-general of volunteers, and participated in the work of the Army of the Potomac, particularly in the Peninsular campaign of 1862, in which he was engaged with his troops at Mechanicsville, Gaines' Mill and Frazier's Farm (qq.v.). At Frazier's Farm, 30 June, he was taken prisoner and was confined for several weeks in Libby prison. In August he was exchanged, but impaired health pre-

vented him from returning to the army, and in 1863 he resigned. He wrote *Letters From the Frontier* (1868).

**McCALL, John Augustin**, American insurance official: b. Albany, N.Y., 2 March 1849; d. Lakewood, N.J., 18 Feb. 1906. He was educated in his native city and served for several years as clerk in the Connecticut Mutual Life Insurance Company. In 1877 he entered the New York State insurance department in which he served as clerk, deputy superintendent and superintendent. In 1887 he was made controller of the Equitable Life Assurance Company and in 1892 became president of the New York Life Insurance Company. In 1905 the Armstrong insurance investigation led to his resignation in 1906 and he died two months after resigning.

**McCALL, Samuel Walker**, American public official: b. East Providence, Pa., 28 Feb. 1851; d. Winchester, Mass., 4 Nov. 1923. In 1874 he was graduated at Dartmouth College, studied law and was admitted to the bar in 1876 and practiced in Boston. He was editor-in-chief of the *Boston Daily Advertiser* in 1888-89 and served as delegate at the Republican National Conventions of 1888, 1900, and 1916. He was member of the Massachusetts House of Representatives in 1888, 1889, and 1892 and was a member of Congress from 1893 to 1913 from the 8th Massachusetts District. He was an unsuccessful candidate for the governorship of Massachusetts in 1914 but was successful the following year, being elected governor for 1916. He was re-elected for the two successive terms of 1917 and 1918. He published *Life of Thaddeus Stevens* (1899); *Dartmouth Centennial Address on Daniel Webster* (1902); *The Business of Congress* (1911); *Life of Thomas B. Reed* (1914); *The Liberty of Citizenship* (1915), and magazine articles.

**MacCALLUM, William George**, American pathologist. b. Dunnville, Ontario, 18 April 1874. He was graduated from the University of Toronto in 1894 and in 1897 was graduated from the medical school of Johns Hopkins University. In 1900-08 he was associate professor of pathology, and in 1908-09 professor of pathological physiology at Johns Hopkins University. In the latter year he became professor of pathology at Columbia University, where he remained until 1917 when he returned to Johns Hopkins University as professor of pathology and bacteriology. He was a fellow of the American Association for the Advancement of Science; a member of the Association of American Physicians; the National Academy of Sciences, and an honorary member of the Society Medicorum Sverana of Stockholm, Sweden. He wrote *Text-Book of Pathology* (1916), and was a frequent contributor to medical journals on pathological subjects. Died Baltimore, Md., 3 Feb. 1944.

**MacCAMERON, mā-kām'ēr-ōn, Robert Lee**, American painter: b. Chicago, 1866; d. New York, 29 Dec. 1912. After studying in the public schools he began to make sketches for the newspapers in Chicago, and soon removed to New York, where he illustrated for newspapers and studied under William M. Chase. He then went to Paris and studied at the Beaux Arts under Gérôme and Collin. He

became a successful portrait painter and for several years before his death kept studios in London, Paris, and New York. For his *Mi-Carême* he received honorable mention in the Paris Salon, and in 1912 he was made a chevalier of the Legion of Honor. He was a member of several foreign and American art societies. Among his best portraits are President Taft, President McKinley, Archbishop Ryan, Justices of the Supreme Court, Italian and Brewer, Nellie Melba, and Auguste Rodin (Metropolitan Museum, New York). MacCameron also achieved reputation for his *cafés* and scenes in theaters. *A Group of Friends*, also called *Wormwood*, painted in 1908, is in the Corcoran Gallery, Washington; the *Daughter's Return*, painted in 1909, is in the Metropolitan Museum, New York. *Les Habitues* (*The Old Customers*) hangs in the Wiltach Gallery, Philadelphia. He also painted a religious picture, *The Last Supper*, in 1909. His last work was *The People of the Abyss* (1912). Consult *Harper's Weekly* (February 1913).

**McCAMMON, Joseph Kay**, American lawyer: b. Philadelphia, 13 Oct. 1845; d. 2 Jan. 1907. He graduated at Princeton in 1865; studied law; became register in bankruptcy in 1870; was special counsel of the United States in Washington, 1871; president of the board for investigation of the Indian service, 1877; assistant attorney general of the United States, 1880-85, and in 1881 was appointed United States commissioner of railroads. Under Presidents Garfield and Arthur he conducted treaties with various Indian tribes. Among his writings are a *Report on Indian Service* (1878); *Report of Councils with Bamock and Shoshone Indians* (1881); *Report of Councils with Flathead and Other Indians* (1882); *Arguments in Cases Affecting Pacific and Other Railroads*.

**McCARREN, mā'kār'ēn, Patrick Henry**, American politician: b. East Cambridge, Mass., in 1849; d. Brooklyn, 22 Oct. 1909. In 1851 he removed to Williamsburg (Brooklyn, N.Y.) and was apprenticed to a cooper, but soon left trade and entered local politics. Before he was 21 he had been defeated for the leadership of his district. In 1881 he was elected to the New York Assembly and was re-elected in 1883 and 1887. In 1889 he was elected to the state Senate and was continuously a member of that body until his death. In 1893 he became virtually the leader of the Brooklyn Democrats. He broke with Charles F. Murphy, the leader of Tammany Hall, and from that time a bitter fight was kept up between these two politicians for the control of the Brooklyn Democrats. In 1904 one of the bitterest chapters in the history of New York politics occurred. McCarren also opposed W. J. Bryan and Charles E. Hughes. McCarren was a man of keen intellect and an aggressive fighter. He was identified with the Standard Oil Company and the American Sugar Company.

**McCARTER, Margaret Hill**, authoress; b. Charlottesville, Ind., 2 May 1860; d. 31 Aug. 1938. She taught in elementary schools in Indiana in 1876; graduated A.B. at the State Normal School, Terre Haute, Ind., in 1884; was principal of the High School, Rensselaer, Ind., 1884-87; held other educational positions to 1894, and was a lecturer of the State Board of

Education. She married, 5 June 1890, William Arthur McCarter, DDS, of Topeka, Kan. She became widely known by her fiction which is as popular in her State as that of William Allen White of Emporia. Her publications include 'The Overflowing Waters' (1903); 'The Cottonwood's Story' (1903); 'Cuddy's Baby' (1907); 'The Old Quirra' (1908); 'Cuddy and Other Stories' (1908); 'The Price of the Prairies' (1910); 'The Peace of the Solomon Valley' (1911); 'Vanguards of the Plains' (1917); 'The Reclaimers' (1918); 'Paying Mother' (1920); 'Widening Waters' (1924); 'The Candle in the Window' (1925).

**McCARTHY, D'Alton**, Canadian politician b. near Dublin, Ireland, in 1836; d. Canada, 11 May 1898. He was the son of an Irish barrister who found a home for his family on the shores of Kempfendfeldt Bay, Ontario, after a six weeks' voyage in a sailing vessel. Educated at the Barrie Grammar School, he studied law and was called to the bar in 1858. In 1872 he was made queen's counsel, and attained high rank both in jury cases and appeal cases. In 1876 he was elected to the House of Commons as a Conservative and held this seat until his death, which was occasioned by a railway accident. He seceded from the Conservative party and aided the Liberals in opposing special legislation in the interest of Roman Catholic education. He was for a time president of the Canadian branch of the Imperial Federation League and a member of the Council of the British Empire League. Consult 'The Late D'Alton McCarthy, Q.C., M.P., an Appreciation,' by Amicus, *Canadian Magazine* (May 1903).

**MacCARTHY, Hamilton Thomas**, Canadian sculptor: b. London, England, 1847. He studied under his father and in Europe, and in 1885 removed to Canada. He lived in Toronto until 1898, when he took up his residence in Ottawa. He was distinguished for his capacity for expressing contemporary thought. The Royal Canadian Academy elected him a member in 1890 and councillor in 1906. Among his works are 'Burns and Highland Mary' (1877); the statue of Sir John H. Macdonald in Toronto; the bronze monuments for the South African War in Halifax, Ottawa, Charlottetown, Quebec and Brantford. D. 24 Oct. 1939.

**McCARTHY, ma-kar'thi, Justin**, Irish author and politician: b. Cork, Ireland, 22 Nov. 1830; d. 24 April 1912. He became connected with the Liverpool press in 1853 and in 1864 was made editor-in-chief of the *Morning Star*. He sat in Parliament as a Home Ruler from 1879-1900 and was chairman of the Irish Parliamentary party 1890-96. His stay in the United States extended from 1868 to 1870, during which period he was some time connected editorially with the *New York Independent*. His main work is 'History of our Own Times' (1879-80), which, rejected by one publishing house, made a fortune for the firm that produced it as well as for the author. He also wrote 'History of the Four Georges' (1889), and his novels include 'Lady Judith' (1871); 'A Fair Saxon' (1873); 'Dear Lady Disdain' (1875); 'The Right Honorable' (1886, with Mrs. Campbell-Praed); 'The Story of Gladstone's Life' (1898); 'Modern England' (1898).

'Reminiscences' (1899); 'The Reign of Queen Anne' (1902), and 'The Story of an Irishman' (1904).

**McCARTHY, Justin Huntly**, Irish journalist and author b. 1860. He was graduated at University College and from 1884-92 was a member of Parliament. He was a prolific and versatile author, following in the footsteps of his father, Justin McCarthy (qv). Among his works are 'Outline of Irish History' (1883), 'Serapion, and Other Poems' (1883); 'England Under Gladstone' (1884), 'Camila, a Girl with a Fortune' (1885); 'History of the French Revolution' (1897); 'Short History of the United States'; 'The Dryad' (1905). He also wrote plays, such as 'The Candidate'; 'The White Carnation'; 'If I Were King,' and 'Stand and Deliver.' D. 21 March 1936.

**McCAUL, ma-kâl', John**, Canadian scholar: b. Dublin, Ireland, 1807; d. 1880. He was appointed president of Toronto University in 1848 and was prominent for many years in educational matters in Canada. He edited Horace, Longinus, Lucian and Thucydides as college textbooks, and among his valuable archaeological works are 'Britanno-Roman Inscriptions' (1863), and 'Christian Epitaphs of the First Six Centuries.'

**MacCAULEY, ma kâl'i, Clay**, American Unitarian clergyman and author: b. Chambersburg, Pa., 8 May 1843. He was graduated at Princeton in 1864 and at the Theological Seminary of the Northwest, Chicago, in 1867, and read philosophy and divinity at Heidelberg, 1873. In the Civil War, 1862-63, he was a lieutenant in the 126th Pennsylvania regiment, and served on the staff of Gen. S. D. Sturgis, and in 1864-65 was a member of the Christian Commission in the United States army. In 1880-81 he was a collaborator of the Bureau of Ethnology among Indians east of the Mississippi. Entering the Unitarian ministry he was pastor of the First Church, Waltham, Mass., 1869-72, and of All Souls Church, Washington, D. C., 1876-81. From 1890 to 1900 and again after 1909 he served as director of the Japan mission of the Unitarian Association, and from 1891 to 1899 was president of the College for Advanced Learning at Tokio and professor there of philosophic and historic theology. He lectured on Japan in 1904-09. He wrote 'Christianity in History' (1891); 'The Religious Problem of Japan—How to Solve It' (1894); 'Introductory Course in Japanese' (1896; 1905); 'Japanese Literature' (1899); 'A Day in the Very Noble City, Manila' (1899), and published 'Single Songs of a Hundred Poets' (1899) and other translations from the Japanese; 'Florida Seminoles' (1884); 'Present Religious Condition of Japan' (1902); 'Unitarian Mission to Japan' (1909); 'A Daughter of the Samurai' (1910); 'Thought and Fact for To-day,' also in Japanese (1911); 'The Memorial Most Worthy of Our Patriot Dead' (1911); 'The English Language in the New Georgian Era' (1911); 'Charles Dickens: An Appreciation' (1912); 'The Faith of the Incarnation' (1913); 'Memories and Memorials' (1914); 'The American-Japanese Problem as a Race Question' (1915), and contributions to periodicals in Japan and the United States. He died 15 Nov. 1925.

**McCAUSLAND'S RAID**, an incursion of the Confederate general McCausland into Maryland and Pennsylvania, the chief incident of which was the burning of Chambersburg, Pa. General Early having defeated General Crook in the battle of Kernstown (q.v.), 24 July 1864, and driven him and Averell across the Potomac at Williamsport, ordered General McCausland with his brigade and that of Bradley T. Johnson, with four guns, in all about 2,500 men, across the Potomac to raid Pennsylvania and then move to Cumberland, Md., to destroy the machinery of the Cumberland coal-pits and the repair shops, stations and bridges of the Baltimore and Ohio Railroad. Early says he wished to open the eyes of the people of the North to the enormities of its armies, by an example in the way of retaliation, and that Chambersburg, Pa., was selected as the town on which retaliation should be made. The sum of \$100,000 in gold, or \$500,000 in currency was to be demanded of it, in default of which McCausland was ordered to burn the town. Under cover of demonstrations at Williamsport and other points along the Potomac, McCausland crossed the river at McCoy's Ferry, near Clear Spring, above Williamsport, on the 29th, and made straight for Chambersburg, about 25 miles northeast. He met with but little opposition and, on the morning of the 30th, rode into the fated town and demanded the sum fixed by Early. It could not immediately be raised; he knew that General Averell was close upon him, and setting fire to the place, laying a greater part of it in ashes, he hastily marched westward to McConnellsburg and encamped. Averell, who was in Hagerstown when he heard that McCausland had crossed the Potomac, started in pursuit with about 2,600 cavalry, went through the burning town and, a few miles from McConnellsburg, struck McCausland's rear, diverting him from his intended march on Bedford and forcing him back to the Potomac at Hancock, which was reached by noon of the 31st. Here McCausland formed for battle, but upon Averell's appearance and prompt attack he withdrew westward by the National road to Cumberland, where, 1 August, he found General Kelley to oppose him, whom he attacked in the afternoon, and skirmished until night, when he retreated toward Old Town, on the Potomac, leaving 30 of his killed and wounded on the field. At Old Town he forced a crossing at daylight 2 August, capturing or dispersing a regiment of new troops from Ohio, and then moved south into the valley of the south branch of the Potomac, by way of Springfield and Romney. From Romney, 4 August, he moved on New Creek and attacked the garrison, but after a stubborn fight was repulsed, leaving 25 dead on the field, the Union loss being 36 killed and wounded. McCausland then withdrew to near Moorefield, where the south fork joins the south branch of the Potomac, and considering himself safe from pursuit went into camp. Averell, who had remained at Hancock when McCausland drew off toward Cumberland, crossed the Potomac on the 4th, and, after a forced march through Bath, Springfield and Romney, before sunrise of the 7th surprised McCausland in his camp and routed him, capturing his four guns, nearly all his wagons, several hundred horses, three battle-flags, many small arms and 420 prisoners, including 38

officers. McCausland's loss in killed and wounded was about 100. Averell's loss was 41 killed and wounded. McCausland's shattered command fled to the mountains and made its way in squads to the Shenandoah Valley, finally assembling at Mount Jackson. "This affair," says Early, "had a very damaging effect upon my cavalry for the rest of the campaign." Consult 'Official Records' (Vols. XXXVII, XLIII); Pond, 'The Shenandoah Valley in 1864'; Early, 'The Last Year of the War for Independence'.

**MacCHESNEY**, mə-chě-ně, Clara T., American artist: b. Brownsville, Cal., 1861; d. 6 Aug. 1928. She studied at the San Francisco Art School, at the Gotham Art School, New York, and at the Colarossi School in Paris. Her genre work received favorable recognition. At the World's Columbian Exposition in 1893 she was awarded two medals and she received the Dodge Prize, New York, in 1894. Later she also received three medals from the Colarossi School, a gold medal from the Philadelphia Art Club and the second Hallgarten prize from the National Academy of Design, New York. At the Paris Exposition of 1900 she exhibited 'Pomegranates' and 'The Old Blind Fiddler.'

**MacCHESNEY**, Nathan William, American lawyer, publicist and writer: b. Chicago, Ill., 2 June 1878. He studied at Chicago University, and graduated from the Law School of the University of Michigan in 1902. He practiced in Chicago, and was a member of many important legal, civic and political boards and organizations. From 1911-17 he served as Judge Advocate General of Illinois, and during the World War was employed in many important legal capacities. From 1924 he was consul-general for Siam. His writings include: 'The Military Policy of the United States'; 'Principles of Military Law'; 'Principles of Real Estate Law'; 'Challenge to American Ideals.'

**MACCHIAVELLI**, Niccolo. See MACCHIAVELLI, NICCOLO.

**McCHORD**, mă-körd, Charles Caldwell, American lawyer: b. Springfield, Ky., 3 Dec. 1859. He was educated at Centre College (now Central University), Danville, Ky., and was admitted to the bar in 1882, engaging in practice at Louisville, Ky. He was a member of the law firm, McChord, Hines and Noiman, until 1911. He was prosecuting attorney of Washington County, Ky., in 1886-92, and was chairman of the Kentucky Railroad Commission in 1892-95 and in 1899-1907. He served in the Kentucky senate in 1895-99 and introduced the railroad rate bill enacted by the legislature. He was president of the National Association of Railroad Commissioners in 1906-07, and in 1910-26 was a member of the Interstate Commerce Commission, resigning in 1926 to resume his law practice.

**McCLAIN**, mə-klān, Emlin, American jurist: b. Salem, Ohio, 26 Nov. 1861; d. 25 May 1915. He was graduated at the State University of Iowa in 1871, later studying law there, and until 1881 he practised law in Des Moines. He was appointed professor of law at the University of Iowa in 1881 and was subsequently vice-chancellor and chancellor there. He served as judge of the Supreme Court of Iowa in 1901-12, and was its chief justice in 1906-12.



From 1913 until his death he was professor of law at the Leland Stanford, Jr., University. He was a contributor to the 'American Encyclopedia of Law and Procedure,' wrote extensively for the law magazines and was author of 'McClain's Annotated Statutes of Iowa' (1880); 'A Treatise on Criminal Law as Now Administered in the United States' (1897); 'Constitutional Law in the United States' (1905, 2d ed., 1910), etc.

**MCCLELLAN**, ma-klē'an, **George Brinton**, American soldier: b Philadelphia, 3 Dec. 1826, d Orange, N. J., 29 Oct 1885. He was educated at the University of Pennsylvania and at West Point where he was graduated in 1846. He was brevetted second lieutenant of engineers and immediately ordered to Mexico, where as lieutenant of a company of sappers, miners and pontoniers he rendered valuable service. He was at the siege of Vera Cruz, at Cerro Gordo and in the attack on the City of Mexico, at Contreras and Churubusco he won the brevet of first lieutenant and was brevetted captain for gallantry at Chapultepec. After the war he was ordered to West Point as captain of field labors and instructor in bayonet exercise. In 1851 he was ordered to Fort Delaware to superintend its construction. The next year he accompanied Capt. Randolph B. Marcy (later his father-in-law) on an expedition to explore the Red River, and in September 1852 was ordered as senior engineer to Texas, to survey the rivers and harbors of that State. In 1853 he was detailed for the examination of the western part of the proposed route for a Pacific railroad; and explored the Yakima Pass and various portions of the Cascade Range, and the most direct route to Puget Sound, his report forming the first volume of the 'Pacific Railroad Surveys' published by the government. He was soon afterward detailed to investigate the railroad system of the United States, with a view to obtain all the necessary data on construction, equipment and management for the successful operation of the Pacific railroad. Of the result of his proceedings he presented a full report in November 1854. In March 1854 he was promoted to captain in the 1st Cavalry. In the spring of 1855 he was sent to Europe to study the organization of European armies and observe the war in the Crimea. He wrote one volume of the report of the commission, which was republished in Philadelphia under the title of 'The Armies of Europe' (1861). He resigned his commission in January 1857, and was for three years vice-president and engineer of the Illinois Central Railroad, at the end of which time he became general superintendent of the Ohio and Mississippi Railroad, and two months later president of the eastern division of the same road. He held this office when the Civil War broke out in 1861. He then received a commission as major-general from the governor of Ohio and proceeded to organize the volunteers of the State; the States of Ohio, Illinois, Indiana, the western part of Pennsylvania and western part of Virginia were united to form the Department of the Ohio under his command. About 1 June his army began to cross the Ohio River into Virginia; on the 18th McClellan himself left Cincinnati to take the field, and by the middle of July the whole northwestern part of the State had been cleared of Confederate troops and the

Wheeling legislature left free to organize a loyal government.

On 22 July, McClellan was summoned to Washington to take command of the Army of the Potomac, and commissioned as major-general of the United States army. On his arrival at Washington he found everything in disorder and the troops badly demoralized in consequence of the defeat at the first battle of Bull Run, and devoting himself to the organizing and disciplining of his army, he soon brought order out of chaos and had his troops well equipped and in excellent condition. On the retirement of General Scott from active service, McClellan was appointed general-in-chief of the armies of the United States. Plans were then taken under discussion for an attack upon Richmond, and here difference of opinion arose between the President and the Secretary of War and McClellan; the plan finally accepted made the base of supplies on Chesapeake Bay, with line of march upon Richmond from the Peninsula. The army did not move until March 1862, and in the meantime discontent had arisen at Washington on account of the delay. On 10 March the army advanced toward Manassas, but as the Confederates had evacuated that place and had fallen back upon Richmond, the real campaign was begun by transporting the troops to Fortress Monroe. On 11 March, some two weeks before leaving Washington, McClellan was deprived of the chief command, leaving him the command of only the Army of the Potomac; McDowell's corps and other reinforcements on which he had relied were also removed from his army for the defense of Washington. He besieged Yorktown for a month, though opposed by a much inferior Confederate force, whose numbers he greatly overestimated; when Yorktown was evacuated 4 May, he advanced toward Richmond, defeating the Confederates at Williamsburg and Hanover Court House. After reaching the Chickahominy, he found his lines too extended to protect from attack and advance upon Richmond, and decided to retreat to the James River; then followed the Seven Days' Battles which ended when the Federal forces reached Hampton's Ferry. From here McClellan had planned a new advance, but dissatisfaction against him was so strong that he was relieved of his command and ordered to evacuate the Peninsula (See **PENINSULAR CAMPAIGN**). He was then put in command of the fortifications of Washington, till after the second battle of Bull Run, when he succeeded General Pope, again taking command of the Army of the Potomac. On Lee's invasion of Maryland, McClellan marched to attack him and fought the battle of Antietam (qv), forcing the Confederates to retreat from their position and following them as far as the Potomac. He did not, however, cross the Potomac in pursuit, as he was awaiting supplies; this failure to follow up his victory caused him to be deprived of his command and he was ordered to Trenton, N. J. He took no further part in the war.

In 1864 he was Democratic nominee for President of the United States, and was defeated, the electoral vote stood 212 for Lincoln against 21 for McClellan, but McClellan's popular vote was 1,800,000. He remained abroad from 1864-68, and on his return had charge of the construction of the Stevens' floating battery

which, however was not completed on account of financial difficulties. In 1870 he was appointed chief engineer of the department of docks for New York City, in 1877 he was elected governor of New Jersey, and during his administration reduced and finally abolished the state tax, improved the system of public education and built up an effective militia; he declined a renomination. As a general, McClellan won the confidence and aroused the enthusiasm of his soldiers to an unusual degree; he excelled as an organizer of armies and had a thorough knowledge of the science of tactics, as shown in his plans of campaign, but in actual campaigning lacked aggressiveness and the power to act quickly and take advantage of his enemy's mistakes. He wrote besides the reports mentioned 'Manual of Bayonet Exercise' (1852) and 'Report on the Organization and Campaigns of the Army of the Potomac' (1864). Consult 'McClellan's Own Story,' edited by W. C. Preme (New York 1887); Michie, P. S., 'General McClellan' (in 'Great Commander' series (b. 1901); Rhodes, J. F., 'The First Six Weeks of McClellan's Peninsular Campaign' (Boston 1896); Ropes, J. C., 'Story of the Civil War' (Vol. II, New York 1895); Webb, A. S., 'Peninsula: McClellan's Campaign of 1862' (ib. 1881), and Bradford, Gamaliel, 'Union Portraits' (in *Atlantic Monthly* Vol. CXIV, Boston 1914).

**MCCLELLAN, George Brinton**, American publicist and public official: b. Dresden, Germany (where his parents were on a visit), 23 Nov. 1865; d. Washington, D. C., 30 Nov. 1940. He was the son of Gen. George B. McClellan (q.v.), and was graduated from Princeton, A.B. in 1886; A.M. in 1889. Taking up journalism, he was a reporter on the staffs of several New York City dailies, and from 1889-92 was treasurer of the Brooklyn Bridge, then a toll structure. In the meantime, he studied law and was admitted to the bar in 1892. In 1893 Richard Croker, then boss of Tammany Hall, picked the youthful 'silk-stocking' as window dressing for his municipal ticket and made him president of the New York City Board of Aldermen. In 1894 he was elected to Congress and served as a member thereof continuously until 1903, when Charles F. Murphy, then the Tammany boss, capitalized the McClellan brains and respectability to defeat Seth Low for a second term as mayor of Greater New York. Two years later Murphy again lined up his forces behind Mr. McClellan as the only means of keeping William Randolph Hearst out of the City Hall. But there was trouble brewing. Mr. McClellan had fought vice and gambling, and otherwise had given offense to Murphy and his following. In January 1906 he committed political suicide by asserting: 'As a Democrat and as mayor of this town, I am unalterably opposed to Charles F. Murphy and everything he stands for.' He retired from politics in 1909 at the end of his second term, but he left behind a record for efficiency and honesty that forms one of the few bright pages in New York officialdom of that era. As mayor he initiated many outstanding municipal projects including the Catskill water supply, the Queensboro and Manhattan bridges, and the Municipal Building. Mr. McClellan was made honorary chancellor of Union University in 1906, and was Stafford Little lecturer on public affairs at Princeton, 1908-10; university

lecturer on public affairs, 1911-12; professor of economic history at Princeton 1912-31; emeritus thereafter. During the World War he served overseas as lieutenant colonel. He was a member of numerous societies and published 'The Oligarchy of Venice' (1904); 'The Heel of War' (1915); 'Venice and Bonaparte' (1931); 'Modern Italy' (1933); also numerous magazine articles. He received the honorary degree of LL.D. from Princeton and Fordham universities in 1905 and from Union University in 1906. In 1889 he married Miss Georgiana L. Heckscher, daughter of John G. Heckscher and niece of August Heckscher. Mr. McClellan traveled extensively, and after leaving Princeton lived in Washington. His collection of Meissen porcelain is famous.

**MCCLEARNAND, John Alexander**, American lawyer: b. Breckinridge County, Ky., 30 May 1812; d. Springfield, Ill., 20 Sept. 1900. He was admitted to the Kentucky bar in 1832, but in the same year volunteered for military service against the Sac and Fox Indians. Five years later he was elected to the Illinois legislature, and subsequently sat for two terms in Congress. During the Civil War he served with distinction at the battle of Fort Donelson, was brigadier general of volunteers, and was promoted major general. He led a division at the battle of Shiloh, relieved Sherman before Vicksburg in 1863 and was in command of the 13th Army Corps until 1864, when he resigned. In 1870 he was appointed circuit judge for the Sangamon, Ill., district. He presided at the National Democratic Convention in Saint Louis, 1876, and was appointed by President Cleveland member of the Utah Commission.

**MACCLESFIELD**, māk'k'iz-fēld, England, market town and municipal borough in Cheshire, 166 miles northwest of London, on the river Bollin and on the London, Midland and Scottish and the London North Eastern railways. In the Domesday Survey it is recorded as part of the estate of the Earl of Chester and is reputed to have become a free borough in the beginning of the 13th century. The first recorded charter, however, dates from 1261. The church of Saint Michael was founded in 1278 and was partially rebuilt and considerably enlarged in 1740. A commercial school was erected in 1840 from the funds of the free grammar school founded in 1502. There are slate and stone quarries in the vicinity and brewing is carried on; but the chief manufactures of the town are in silk and cotton textiles. The first silk mill was set up in 1755, while the manufacture of cotton was begun in 1785. The town has modern water and gas works, an insane asylum, public library, parks, baths and markets. Pop. about 34,797.

**MCCCLINTOCK, Emory**, American actuary: b. Carlisle, Pa., 19 Sept. 1840; d. 10 July 1916. He was graduated from Columbia University in 1859, and afterward took special studies in chemistry. He was tutor in mathematics at Columbia 1859-60. He was consular agent at Bradford, England, 1863-66, actuary of the Asbury Life Insurance Company, New York, 1867-77, and of the Northwestern Mutual Life Insurance Company, Milwaukee, 1871-89. From 1889 to 1911 he was actuary of the Mutual Life Insurance Company, New York, of which he was vice-president in 1905-

11, trustee after 1905 and consulting actuary after 1911. He was president of the American Mathematical Society in 1890-94 and of the Actuarial Society of America in 1895-97. He was a Fellow of the American Academy of Arts and Sciences and Fellow of the Institute of Actuaries, London. He contributed to mathematical journals.

**McCLINTOCK, Sir Francis Leopold**, English admiral b Dundalk, Ireland, 1819; d. 17 Nov. 1907. He entered the British navy in 1831 and was commissioned lieutenant in 1845. He sailed on four Arctic voyages, being sent out in 1848 to search for Sir John Franklin, and again in 1850 and 1852, without discovering any traces of the explorer. In 1857 he renewed the search as commander of the *Fox* and brought back documentary and other evidence of Franklin's death. For his services as an Arctic explorer he was knighted in 1860, and in 1884 made admiral. He wrote 'Voyage of the Fox' (1859).

**McCLINTOCK, John**, American scholar: b Philadelphia, Pa., 27 Oct 1814; d Madison, N Y., 4 March 1870. He was graduated at the University of Pennsylvania in 1835. He entered the ministry of the Methodist Episcopal Church and from 1836 to 1851 was professor of mathematics and of Greek and Latin in Dickinson College. From 1848 to 1856 he edited the *Methodist Quarterly Review*. He was delegate to several conferences abroad and in 1857 became pastor of Saint Paul's Church, New York. Three years later he was appointed preacher of the American Chapel in Paris. He advocated the Union cause in the Civil War, and after his return to America in 1864 was again pastor of Saint Paul's, New York, but failing health compelled his resignation and he retired to Germantown, Pa. He removed to New Brunswick, N. J., in 1866 and became chairman of the Central Centenary Committee of the Methodist Episcopal Church. For the last three years of his life he was president of the Drew Theological Seminary. He was joint editor and compiler with James Strong of the 'Cyclopedia of Biblical, Theological and Ecclesiastical Literature' which goes by their name, the last volume of which was published in 1895. Among his other works are 'An Analysis of Watson's Theological Institutes' (1850); and 'Temporal Power of the Pope' (1853). He also issued a translation of Neander's 'Life of Christ' (1847); 'Sketches of Eminent Methodist Ministers' (1863); a translation of Bunger's 'History of the Council of Trent' (1851); 'Living Words,' sermons (1871) and 'Lectures on Theological Encyclopædia and Methodology' (1873). Consult the 'Life' by Crooks (New York 1876).

**McCLOSKEY, ma-klös'kī, John**, American Roman Catholic prelate: b Brooklyn, N Y., 20 March 1810; d. New York, 10 Oct. 1885. His secondary and collegiate studies were made at Mount Saint Mary's College, Emmitsburg, Md., and his post-graduate studies in France and Rome. At 24 he was ordained priest and on returning to America was assigned to Saint Joseph's Church, New York City. When Saint John's College, at Fordham (now a part of New York City), was opened in 1841, he was made its first president, but in the next year he returned to parish work. In 1844 he was ap-

pointed coadjutor to Bishop Hughes of the diocese of New York, and consecrated titular bishop of Axiere, and three years later was appointed bishop of Albany, a diocese just created from a part of the diocese of New York. For 17 years he worked for the upbuilding of the Albany diocese and the good of his people. He built the cathedral of the Immaculate Conception at Albany, Saint Joseph's Theological Seminary at Troy, established several new parishes and founded educational and charitable institutions, including hospitals, orphanages, homes for the aged and reformatories. He succeeded Archbishop Hughes in the archiepiscopal see of New York, 6 May 1864. The result of his labors in the archdiocese of New York remains his greatest monument. He was made a cardinal in 1875, under the title of Santa Maria supra Minervam. He was in attendance at the Vatican Council (q v) and a member of the committee on discipline. He was summoned to Rome February 1878 to attend the conclave for the election of a Pope but was too late to cast a vote, Leo XIII having been elected a few hours before his arrival. Cardinal McCloskey was noted for his gentleness, firmness, profound scholarship and great executive ability. Consult 'The Life of John Cardinal McCloskey, First Prince of the Church in America 1810-85'.

**McCLOSKEY, William George**, American Roman Catholic prelate b Brooklyn, N Y., 10 Nov 1823, d 17 Sept. 1909. Upon completing his studies at Mount Saint Mary's College, Emmitsburg, Md, he turned to the law, but subsequently entered Saint Mary's Theological Seminary, where he pursued a six years' course in philosophy and theology, being ordained priest 6 Oct 1852. His first appointment was as assistant in the church of the Nativity. In 1853 he was named professor of Latin and Sacred Scriptures in Mount Saint Mary's College and in 1857 became director of the theological seminary. When the American College was formally opened in Rome Pope Pius IX chose Dr. McCloskey its first president, 8 Dec. 1859, a position which, for eight years, he filled to the utmost satisfaction. In 1865 he visited America in the interests of the institution under his charge and succeeded in collecting funds sufficient for its permanent endowment. Upon the death of Bishop Lavalie, Pope Pius IX appointed Dr. McCloskey to the see of Louisville, Ky., and he was consecrated at Rome 24 May 1868. During his 36 years' administration numerous churches, schools and religious institutions were built throughout his diocese.

**McCLUNG, mā-klung', Clarence Erwin**, American zoologist: b. Clayton, Calif., April 5, 1870; d. Swarthmore, Pa., Jan 17, 1946. He was graduated at the University of Kansas in 1892, later studying at Columbia University and the University of Chicago. A member of the faculty of the School of Medicine at the University of Kansas in 1897-1913, he then became professor of zoology and director of the zoological laboratory at the University of Pennsylvania. He was internationally known for his extensive studies on chromosomes and headed scientific expeditions to Oregon, Washington, and western Kansas. He wrote articles on the cretaceous fish of Kansas, and was managing editor of the *Journal of Morphology*.



**McCLURE, ma'kloor', Alexander Kelly**, American journalist: b. Sherman's Valley, Perry County, Pa., 9 Jan. 1828; d. 1909. He was reared on a farm, educated at home and apprenticed to a tanner in 1842, soon after began to write for the *Perry Freeman* and edited and published the *Jumata Sentinel* at Millin, Pa., in the Whig interest, 1846-50. He then published (1850-56) the *Chambersburg Repository*, which he made influential in the cause of anti-slavery. He was State superintendent of printing in 1855; a member of the State convention of 1855 which met at Pittsburgh to organize the Republican party; in 1856 was admitted to the bar and was a delegate to the first Republican National Convention in Philadelphia. In 1857-58 he sat in the legislature as a Republican and was State senator in 1859. As leader of the Pennsylvania delegation in the Republican National Convention of 1860 he aided in the nomination of Abraham Lincoln. In 1862-64 he again published the *Chambersburg Repository*, and in the latter year served as assistant adjutant-general in charge of the draft in Pennsylvania. Two years later he was again a member of the legislature, and in 1868-73 practised law in Philadelphia. He was chairman of the State delegation to the Liberal Republican Convention in 1872, and of the Liberal Republican State Committee, and in that year entered the State senate. In a close election in 1873 he was defeated as an independent candidate for mayor of Philadelphia. In 1875 he established the *Philadelphia Times*, of which he was editor-in-chief till 1901. He published 'Three Thousand Miles Through the Rocky Mountains'; 'Our Presidents and How We Make Them' (1901); 'Recollections of Half a Century' (1902); 'Old Time Notes of Pennsylvania' (2 vols., 1906), etc.

**McCLURE, James Gore King**, American Presbyterian clergyman: b. Albany, N. Y., 24 Nov. 1848. He was graduated at Yale in 1870, at the Princeton Theological Seminary in 1873 and ordained as a Presbyterian minister in 1874. He was settled (1874-79) at New Scotland, N. Y., and at Lake Forest, Ill., 1881-1905. From 1897 to 1901 he was president of Lake Forest University. In 1905-28 he was president of McCormick (now Presbyterian) Theological Seminary, Chicago. He has written 'The Man Who Wanted to Help' (1897); 'The Great Appeal' (1898); 'Environment' (1899); 'For Hearts that Hope' (1900); 'A Mighty Means of Usefulness' (1901); 'Living for the Best' (1903); 'The Growing Pastor' (1904); 'Loyalty, the Soul of Religion' (1905); 'Supreme Things' (1907), etc.

**McCLURE, Sir Robert John Le Mesurier**, English vice-admiral: b. Wexford, Ireland, 28 Jan. 1807; d. London, 17 Oct. 1873. He began his naval career in 1824, and in 1836 under Sir John Ross made his first voyage to the Arctic regions. Again he joined an expedition sent to discover the Northwest Passage in 1848, that of Sir James Clark Ross. Two years later he was placed in command of a Franklin search expedition, discovered Prince of Wales Strait which connects the Atlantic and Pacific and thus accomplished one object of the expedition, the discovery of the Northwest Passage. He was forced, however, to abandon his ship, and completed the Northwest Passage by land. On his

return he was knighted. From his journals was published 'The Discovery of the Northwest Passage' (by Capt. Sherard Osborne, 1856).

**McCLURE, Samuel Sidney**, American editor and publisher: b. Process, County Antrim, Ireland, 17 Feb. 1857. He was graduated at Knox College, Galesburg, Ill., in 1882. In 1882-83 he was editor and manager of the *Wheelman* for the Pope Manufacturing Company, and in the following year was connected with the De Vinne Press, New York. In 1884 he established a newspaper syndicate which has grown to great proportions and assumed distinctive importance in the publishing world. In 1893 he founded *McClure's Magazine*, which through his able administration soon stood in the front rank of American periodicals. In 1899 he established the publishing house of McClure, Phillips and Company, New York, and was its president until the business was acquired by Doubleday, Page and Company. The magazine was taken over by the McClure Publications, Incorporated. Since 1893 Mr. McClure has been president of the S. S. McClure Company and since 1894 he has been a trustee of Knox College. Consult Mr. McClure's very interesting 'My Autobiography' (New York 1914).

**McCLURG, ma-kloorg', Alexander Caldwell**, American publisher: b. Philadelphia, 1834; d. Saint Augustine, Fla., 15 April 1901. He was graduated at Miami University, Oxford, Ohio, in 1853, engaged in business with S. C. Griggs and Company, publishers, in Chicago and in 1862 entered the Union army. He was captain in the 88th Illinois regiment of infantry, rose to the rank of colonel, was made brevet brigadier-general, and in the Atlanta campaign and during Sherman's great march served as chief of staff to the 14th corps. Returning from the war, he was admitted to partnership in the publishing house above mentioned, and some years later established the firm of Jansen, McClurg and Company, afterward A. C. McClurg and Company. The business of the house prospered, and in 1899 the company was reorganized, the co-operative principle adopted and the employees, among whom the stock was largely distributed, were granted easy terms for increasing their investments.

**McCLYMONT, mäk-klí'mont, James Alexander**, Scottish theologian: b. Girvan, Ayrshire, 26 May 1848. He was educated at the universities of Edinburgh and Tübingen, entered the ministry and in 1874-1913 he was in charge of Holburn Church, Aberdeen, when he retired. He was a member of the general committee of the Church of Scotland, and was a chaplain in the territorial force, retired with the rank of colonel. He collaborated in translating Beck's 'Pastoral Theology of the New Testament' and was author of 'The New Testament and its Writers' (1892; 2d ed., 1893); 'The Church of Scotland' (1893); 'New Testament Criticism' (1913), etc. He died 19 Sept. 1927.

**MacCOLL, ma-köll', Evan**, Canadian poet: b. Kenmore, Argyllshire, Scotland, 21 Sept. 1808; d. Toronto, 1898. He emigrated to Canada in his 42d year and became known as the poet of the Scottish colony at Kingston. He wrote with fluency in Gaelic and his 'Clàreach nam Beann' created much enthusiasm among

his compatriots. He is also author of many English poems, such as 'My Rowan Tree'; 'The Mountain Minstrel' (1887); and 'Poems and Songs' (1888)

**MacCOLL, Malcolm**, British theologian and author b Glenfinnan, Inverness-shire, Scotland, 27 March 1831; d London, 5 April 1907. He studied at Trinity College, Glenalmond, and at the University of Naples and was ordained in the Scottish Episcopal ministry in 1857. He filled curacies at different London churches, was chaplain to the British Ambassador at Petrograd in 1862-63, in southern Italy in 1867-69, and at Addington, Bucks. His hearty support of Gladstone won for him in 1871 recognition in the form of the living of Saint George's, Botolph Lane, and he was further rewarded with a canonry at Ripon in 1884. He was a keen controversialist in both ecclesiastical and political fields, and was actively engaged in newspaper and pamphlet writing in support of High-Church doctrines and of Gladstone's Irish policy. He traveled extensively and was prominently concerned with the airing of Bulgarian and Armenian affairs after a visit in those countries in 1876. Author of 'Mr. Gladstone and Oxford' (1865); 'Lawlessness, Sacerdotalism and Ritualism' (1875); 'Reasons for Home Rule' (1886, nine eds); 'The Reformation Settlement' (10th ed, 1901); 'The Royal Commission and the Ornaments Rubric' (1906), etc.

**McCOMB, mā-kōm, John**, American engineer and architect: b New York, 17 Oct. 1763; d. there, 25 May 1853. He became prominent for his designs for both public and private buildings in New York, Philadelphia and the Eastern States. He designed the front of the old government house in New York in 1790, Saint John's Church, and was supervising architect of the city of New York at the time of the erection of the city hall.

**McCOMB, Miss**, city in Pike County; 78m. S. of Jackson, on the Illinois Central Railroad. It has railroad shops and cotton, rayon and silk mills. Pop. (1940) 9,898.

**McCOMBS, William Frank**, American lawyer: b. Hamburg, Ark., 26 Dec. 1875; d. 22 Feb. 1921. He was graduated at Princeton in 1898 and at the Harvard Law School in 1901. He practiced in New York City, and as chairman of the Democratic National committee in 1912-16 he managed the first campaign of Woodrow Wilson for President. He declined the ambassadorship to France in March 1913.

**McCONNELL, mā-kōn'ēl, Francis John**, American Methodist-Episcopal bishop: b. Trinway, Ohio, 18 Aug 1871. He was educated at the Ohio Wesleyan University and entered the ministry in 1894. He held pastorates in Massachusetts at West Chelmsford; Newton Upper Falls; Ipswich; Haward street, Cambridge; and at New York avenue, Brooklyn. In 1909-12 he was president of De Pauw University, and in 1912 he was elected bishop. Author of 'The Divine Immanence' (1906); 'The Preacher and the People' (1922); 'Is God Limited?' (1924); 'The Christlike God' (1927).

**McCONNELL, Samuel D.**, American Protestant Episcopal clergyman and author: b. in Westmoreland County, Pa., in 1846. He was

graduated at Washington and Jefferson College in 1868, and was ordained a priest in 1873; was rector of Saint John's Church, Erie, Pa., 1872-73, held rectorships at Watertown, Conn. (1873-76), and Middletown, Conn. (1876-82); became rector of Saint Stephen's Church, Philadelphia, in 1882, of Holy Trinity Church, Brooklyn, N. Y., in 1896; and from 1902 to 1905 was rector of All Souls' Church, New York City. He retired in the latter year. He has published a 'History of the American Episcopal Church' (1890); 'Sons of God' (1891); 'Sermon Stuff' (1888, 1895); 'A Year's Sermons' (1896); 'The Open Secret'; 'The Next Step in Christianity'; 'Essays, Practical and Speculative' (1900); and 'The Evolution of Immortality' (1901); 'Christ' (1902); 'Christianity' (1905); 'Confession of An Old Priest.'

**McCONNELLSVILLE**, Ohio, town and Morgan County seat; alt. 710 feet, on the navigable Muskingum River; served by the Baltimore and Ohio Railroad at Malta, across the river; 27m. SE. of Zanesville. Located in a farming region, it has no important industries. A monument stands at the spot where the Confederate raider Gen. John Hunt Morgan (q.v.) crossed the river. Pop. (1940) 1,895.

**McCOOK, ma-kuk, Alexander McDowell**, American soldier b. Columbiana County, Ohio, 22 April 1831; d. Dayton, Ohio, 12 June 1903. He was graduated at West Point in 1853, and with the commission of second lieutenant of the 3d Infantry was ordered to New Mexico. In 1861 he gained his captaincy and saw much service during the Civil War. He commanded the Ohio volunteers at Bull Run and rapidly gained promotion, being appointed major-general of volunteers in 1862. His brilliant military reputation was made at the battles of Shiloh, Murfreesboro, Chickamauga, etc., and in 1865 he was brevetted brigadier-general in the regular army. He was subsequently placed in command of the military school at Fort Leavenworth, was commissioned major-general in 1894 and retired the following year. He represented the United States at the coronation of the Tsar in 1896 and in 1898-99 was a member of a commission appointed by President McKinley to investigate the work of the War Department during the War with Spain. General McCook came of a fighting family. He was the son of Daniel McCook (q.v.) who was killed by Morgan's guerillas in 1863. Seven of the general's brothers took part in the War for the Union, three of whom, like their father, were killed. Four of the eight McCook brothers attained the rank of general. Consult Hosmer, J. K., 'The Appeal to Arms' (New York 1906); id., 'Outcome of the Civil War' (ib. 1906); Rhodes, J. F., 'History of the United States' (ib. 1907).

**McCOOK, Anson George**, American soldier and politician: b. Steubenville, Ohio, 10 Oct. 1835; d. 30 Dec. 1917. At the outbreak of the Civil War he entered the Federal army as captain of an Ohio company recruited by himself. He subsequently served as major, lieutenant-colonel in the Army of the Cumberland, afterward as colonel of 194th Ohio Infantry and at end of the war was brevetted brigadier-general. He was United States assessor of internal revenue at Steubenville, Ohio, and removed to New York in 1873. In 1876 he was elected as a Republican to the

45th Congress and re-elected to the 46th and 47th Congresses from the old 8th (city) district. Was elected secretary to the Senate of the United States, December 1883, and served as such until August 1893. On 1 Aug 1895, he was appointed city chamberlain by Mayor William L. Strong, and served until the expiration of the latter's term of office, 1 Jan 1898. He was president and director of the New York Law Publishing Company.

**McCOOK, Daniel**, American soldier: b. Canonsburg, Pa., 20 June 1798; d. near Buffington's Island, Ohio, 21 July 1863. Having received a college education, he removed from Pennsylvania to Ohio and settled at Carrollton. Although 63 years old at the outbreak of the Civil War, he entered the Union army, in which he served as major of volunteers. During one of the Morgan raids (qv) he received a wound from which he died shortly after. Eight sons of his served as officers in the Federal army, three of whom were killed in battle.

**McCOOK, Henry Christopher**, American clergyman and entomologist: b. New Lisbon, Ohio, 3 July 1837; d. 1911. He was graduated at Jefferson College (now Washington and Jefferson) in 1859, studied at the Western Theological Seminary, and in the Civil War he served as first lieutenant and chaplain in the 41st Illinois regiment, 1861-62. In 1862-63 he was minister of a church at Clinton, Ill.; from 1863 to 1870 labored in Saint Louis as a home missionary; and subsequently became pastor of the Tabernacle Presbyterian Church in Philadelphia, a charge he long retained. He served as chaplain of the 2d regiment of Pennsylvania volunteers in the Spanish-American War, and was chaplain of the Pennsylvania Commandery of the Loyal Legion, president of the American Entomological Society, vice-president of the Academy of Natural Sciences, Philadelphia, and president of the American Presbyterian Historical Association. His writings include 'The Gospel in Nature'; 'The Mound-Making Ants of the Alleghenies' (1877); 'The Agricultural Ants of Texas' (1879); 'Honey Ants and Occident Ants' (1882); 'Tenants of an Old Farm' (1884); 'The Women Friends of Jesus' (1885); 'American Spiders and Their Spinning-Work' (1889-93); 'The Latimers, a Scotch-Irish Historic Romance of the Western Insurrection' (1898); 'Martial Graves of Our Fellow Heroes in Santiago de Cuba'; 'Nature's Craftsmen: Popular Studies of Ants and Other Insects' (1907); 'Ant Communities and how they are Governed' (1909).

**McCOOK, Nebr.**, city and Red Willow county seat, alt. 2,938 feet, on the Republican River, and the Chicago, Burlington and Quincy Railroad, 228m. W. of Lincoln. As a railroad division point in a rich agricultural region, it is a strong trading center. The railroad shops are the industrial mainstay, but the packing and shipment of food products are important. There is a public library; also a D. A. R. museum, and junior and business colleges. Settled in 1881, McCook was incorporated as a village in 1882, as a town in 1886, and as a city in 1933. It was named for Gen. Alexander McDowell McCook, a Union officer in the Civil War. It has a mayor and council. Pop. (1940) 6,212.

**McCORMACK, John**, Irish tenor: b. Athlone, Eire, June 14, 1884; d. Booterstown, County Dublin, Eire, Sept. 16, 1945. Educated at Summer Hill College, County Sligo, he won the gold medal for singing at the National Irish Festival (Féis Ceoil), and studied with Sabatini at Milan. On Oct. 15, 1907, he made his operatic debut at Covent Garden, London, as Tairldu in *Cavalleria Rusticana*; and on Nov. 10, 1909, he made his New York debut at the Manhattan Opera House in *La Traviata*. Thereafter he sang with the Chicago-Philadelphia, Metropolitan, Chicago Grand, and Monte Carlo opera companies. In 1913 he turned to the concert stage, where he achieved great popularity, especially for his singing of Irish songs. During the First World War he was instrumental in raising nearly a million dollars for patriotic purposes. In 1919 he became a United States citizen, and in 1928 was raised to the papal peccage, with the title and dignity of count. He made the talking motion picture, *Song O' My Heart* in 1929. His retirement was marked by a farewell tour in 1938, but in 1944 he started a tour for the British Red Cross. His health broke down and he was ordered by his doctor to give up singing.

**McCORMICK, ma-kôr'mik, Alexander Hugh**, American naval officer: b. in the District of Columbia, 9 May 1842; d. 21 Aug. 1915. He was acting midshipman at the United States Naval Academy in 1859; in April 1861 entered into active service and served in blockading squadrons throughout the Civil War. He became captain in 1892. Since the Civil War he has performed various sea duties, and has served in the department of mathematics and in that of astronomy and navigation at the Naval Academy. He was inspector of ordnance, 1876-81; made a cruise around the world, 1881-85; was assigned to the ordnance department, 1885-92; to the Asiatic station, 1892-94; was captain of the Norfolk navy yard, 1894-97; member of the armor and personnel board, 1897-98; and commandant of the Washington navy yard in 1898. In 1899 he was raised to the rank of rear-admiral, and was retired 26 March 1900.

**McCORMICK, Cyrus Hall**, American inventor and manufacturer: b. in Virginia, 1809; d. Chicago, 13 May 1884. He removed from his native State to Cincinnati in 1845, and two years later went to Chicago. In 1831 he invented an improved reaping-machine, which was patented and further improved, and which brought him great wealth and world-wide fame, with many decorations, medals, etc. He contributed liberally in 1859 to the establishment of the Presbyterian Theological Seminary of the Northwest, in Chicago, later called McCormick Seminary. He also endowed a chair in Washington and Lee University, Virginia.

**McCORMICK, Joseph Medill**, American journalist and legislator: b. Chicago, 16 May 1877. In 1900 he was graduated at Yale University. He became vice-president and publisher of the Chicago *Daily Tribune* and also served as president of the City Press Association. He opposed William Lorimer and was one of the leaders in the movement to oust the latter from his seat in the United States Senate. In 1912-14 he served as vice-chairman of the Progressive National committee and supported Roosevelt's candidacy for the Presidency at the

Convention of 1912. He was vice-chairman of the Progressive National Committee, 1912-14. He was twice elected to the General Assembly of Illinois, and in 1916 was elected to the National House of Representatives. He was elected to the United States Senate in 1918, but was defeated for renomination in 1924. He died at Washington, D. C., 25 Feb. 1925.

**McCORMICK, Leander James**, American inventor: b. in Virginia, 1819; d. Chicago, 20 Feb. 1900. In early life he worked with his father in manufacturing reaping-machines; removed to Chicago in 1848, and entered into partnership with his brother, Cyrus Hall McCormick (q.v.), and superintended the manufacturing department of their reaping-machine plant until 1879, when the firm was incorporated as the McCormick Harvesting-Machine Company. Ten years later he retired from active business. Many of the improvements in the famous McCormick reaping-machine were made by him. In 1871 he gave an observatory with a powerful telescope to the University of Virginia.

**McCORMICK, Robert Sanderson**, American diplomat, father of Joseph Medill McCormick and Robert Rutherford McCormick: b. Rockbridge County, Va., 26 July 1849; d. Chicago, 16 April 1919. He was educated at the University of Virginia and entered the diplomatic service as secretary of the American legation at London in 1889-92. He was appointed first Ambassador to Austria-Hungary in July 1902; was Ambassador to Russia from December 1902 to 1905; and Ambassador to France in 1905-07. He was decorated with the Order of the Rising Sun, Japan, 1907. During the Russo-Japanese War Mr McCormick represented the interests of Japan in Russia.

**MCCORMICK OBSERVATORY.** See LEANDER MCCORMICK OBSERVATORY.

**MCCORMICK THEOLOGICAL SEMINARY**, in Chicago, Ill.; opened in 1830 under the auspices of the Presbyterians, as a department of Hanover Academy, at Hanover, Ind. Ten years after its opening the school was removed to New Albany, Ind. Cyrus H. McCormick (q.v.) offered the institution a liberal endowment, which generous gift caused the removal of the school to Chicago, in 1859. It was at first known as the Presbyterian Theological Seminary of the Northwest. In 1886 it was named in honor of its liberal benefactor. It is now called the Presbyterian Theological Seminary. No fees are charged, and some of its income is used in assisting needy students. Recently there were connected with the seminary 15 professors and instructors and 174 students. The library contained about 55,000 volumes. The total income on productive funds and from other sources, but excluding benefactions, was about \$125,000. Its buildings and grounds were valued at nearly \$1,450,000 and its endowment funds at about \$112,375,000.

**McCOSH, ma-kōsh', James**, Scotch-American author and educator: b. Carskeoch, Ayrshire, 1 April 1811; d. Princeton, N. J., 16 Nov. 1894. He was educated at the University of Glasgow, which he entered at 13, and at the University of Edinburgh, where he went in 1829. He became a minister of the Church of Scotland; was settled at Arbroath in 1835, and

at Brechin in 1839; but at the disruption of the Scottish Church joined the Free Church, whose organization he was active in promoting. In 1850 he published 'The Method of the Divine Government, Physical and Moral,' in which he applied the philosophy of Sir William Hamilton to questions of theology with such skill as to elicit from him the highest commendation. This work at once gave McCosh wide fame as a philosophical thinker, and in 1851 he was appointed professor of logic and metaphysics in Queen's College, Belfast, where he remained 18 years, not only discharging his professional duties, but also entering earnestly into work of religious and social improvement, through which his spirit of benevolence and his enlightened zeal for general education accomplished lasting results. In 1863 he was elected president of the College of New Jersey (now Princeton University), having previously visited this country and become impressed with its educational promise. This promise was especially bright when he assumed the presidency of Princeton, but the conditions of transition in the sphere of higher education were such as to demand consummate powers of leadership. Such powers McCosh, although a foreigner, brought to his work with most satisfying success. During the 20 years of his administration at Princeton he saw the number of students and professors more than doubled and prosperity increased in all departments. His resignation in 1883 was due to the advance of years, and he was able to continue in the chair of philosophy beyond that period. As a philosopher he maintained the principles of the Scottish metaphysicians against all empirical methods, but went beyond his predecessors in the direction of intuitionism, although he once declared that this "rose out of rationalism as frogs rise out of the melted ice," and few orthodox theologians were abreast of him in welcoming the evolutionary features of the new biology. His writings on theology, philosophy and psychology are very numerous and include 'Typical Forms and Special Ends in Creation,' in collaboration with Dickie (1856); 'The Intuitions of the Mind Inductively Investigated' (1860); 'The Supernatural in Relation to the Natural' (1862); 'An Examination of Mill's Philosophy' (1866); 'Laws of Discursive Thought' (1869); 'Christianity and Positivism' (1871); 'The Scottish Philosophy, Biographical and Critical' (1874); 'The Development of Hypothesis' (1876); 'The Emotions' (1880); 'Psychology of the Cognitive Powers' (1886); 'Psychology of the Motive Powers' (1887); 'Realistic Philosophy Defended' (1877), and 'Our Moral Nature' (1892). Consult Dulles, J. H., 'A McCosh Bibliography' (Princeton 1895), and Sloane, W. M., 'The Life of James McCosh' (New York 1896).

**McCOY, Isaac**, American missionary and Indian agent: b. near Uniontown, Pa., 13 June 1784; d. Louisville, Ky., 21 June 1846. His early life was spent in Kentucky. Reared on the frontier, his educational advantages were very limited, but he was of a studious disposition. He was married at the age of 20 and was ordained to the ministry of the Baptist Church at 24, settling in Indiana about the same time. After serving eight years as pastor of a church, he entered the mission field among the Miami

Indians, in the valley of the Wabash River, in 1817. He subsequently labored among the people of the Pottawatomic and Ottawa tribes in Michigan. During the course of his work among the Indians he became impressed with expediency of removing the Indians from the contaminating influences of the white settlements. In June 1824 he submitted the matter to the consideration of the Baptist Mission Board at Washington, D. C., and was authorized to present the matter to the attention of the President of the United States. He failed to secure an audience with President Monroe, but he was successful in interviewing the Secretary of War, John C. Calhoun, under the jurisdiction of whose department was included all matters pertaining to the administration of Indian affairs. Secretary Calhoun approved of the scheme thus proposed for the establishment of an Indian Territory west of the Mississippi and became its champion. Although several tribes had removed to the West prior to that time, the government had no settled policy in regard to the matter until after Secretary Calhoun took it up officially after the suggestion was made by Mr. McCoy. In 1827 he again visited Washington, where he interviewed President John Quincy Adams and Secretary Barbour of the War Department. In 1828, Mr. McCoy and Capt. George Kennerly of Saint Louis were appointed by the Secretary of War as commissioners to conduct delegations representing the Choctaw, Creek, Pottawatomic and Ottawa tribes on an inspection of the region to be included in the proposed Indian Territory, in the performance of which duty they made two tours of the wilderness region west of Missouri and Arkansas during the late summer and autumn of 1828. During the ensuing 10 years Mr. McCoy was almost constantly in the Indian Territory (i.e., the present States of Kansas, Nebraska and Oklahoma), selecting and surveying locations for immigrant Indian tribes for the government, and, at the same time, aiding in the location and establishment of missions and schools among them. He published a brief annual pamphlet entitled *The Annual Register of Indian Affairs within the Indian (or Western) Territory*, during the years 1835 to 1838 inclusive. Previous to that he had published a pamphlet, 'The Practicability of Indian Reform.' He was also the author of 'A History of Baptist Indian Missions.' His last years were spent at Louisville, Ky., where he had charge of the work of the American Indian Mission Association.

**McCOY, Joseph G.**, American pioneer in the overland cattle trade: b. Springfield, Ill., 20 Dec. 1837; d. Kansas City, Mo., 19 Oct. 1915. Reared on a farm, he made a specialty of feeding cattle for the beef market. At the conclusion of the Civil War the scarcity and high price of beef and the seeming impossibility of transporting the cheap cattle from the overstocked ranges of Texas to the Northern markets, because of the introduction of splenic fever which was certain to follow among native herds, appealed to the typically American genius of McCoy for achieving that which had been reputed to be impossible. He finally proposed the establishment of a shipping point on one of the new railways, which were then being built westward across the great plains, to which the

beef stock of Texas might be slowly driven northward during the grazing season, keeping well to the westward of the frontier settlements, and shipped thence by rail to the market at Chicago for immediate slaughter. This proposal, though simple, was so novel that railway managers at first refused to consider it seriously. McCoy finally induced one of the railway companies to back him in the enterprise and he arranged to build shipping pens at Abilene, Kan. As the result of a diligent advertising campaign a few Texas ranchmen were persuaded to undertake to drive herds across the Indian Territory to the designated shipping point on the Kansas Pacific Railway, during the season of 1867. Thirty-five thousand head of beef cattle were thus marketed that season. The next year the number thus driven overland to the shipping point was increased to 75,000 head, in 1869, this number was doubled, and in 1870 the number was doubled again. When the overland cattle trade was well established the railway company soon ceased to pay the stipulated royalties to McCoy, but he continued his active interest in the live-stock business until old age forced his retirement. He published 'Historic Sketches of the Cattle Trade in the West and Southwest' (1874). He was a pioneer settler at El Reno, Okla., in 1889, and was nominated as the candidate for Territorial delegate to Congress by the convention of the Democratic party in 1890.

**McCRACKEN, ma-krä'kan, William Denison**, American author and lecturer: b. Munich, Germany, 12 Feb. 1864; d. New York City, 12 June 1923. He received his earliest education at the Latin Gymnasium, Stuttgart, Germany, Saint Paul's School, Concord, N. H., and was afterward graduated at Trinity College, Hartford, Conn., in 1885. He wrote 'The Rise of the Swiss Republic' (1892); 'Romance and Teutonic Switzerland' (1894); 'Swiss Solutions of American Problems'; 'Little Idyls of the Big World' (1895); 'The Huntington Letters' (1897); 'Fair Land Tyrol' (1905); 'The Italian Lakes' (1907); 'Christian Science: Its Discovery and Development' (1912). From 1901-04 he was a member of the Christian Science Committee on Publication.

**MacCRACKEN, Henry Mitchell**, American Presbyterian clergyman and educator: b. Oxford, Ohio, 28 Sept. 1840; d. Orlando, Fla., 24 Dec. 1918. He was graduated at Miami University in 1857; for four years was a teacher and school superintendent; studied at the United Presbyterian Theological Seminary, Xenia, Ohio, and at the Princeton Theological Seminary, and later at Tübingen and Berlin universities. He was minister of the Westminster Church, Columbus, Ohio, 1863-67, and of the First Presbyterian Church at Toledo, Ohio, 1869-81. In 1867 he was deputy to the General Assembly of the Free Church of Scotland, and to that of the Presbyterian Church of Ireland in 1884. From 1880 to 1884 he was chancellor of the Western University, Pittsburgh, Pa., and in the latter year became vice-chancellor and professor of philosophy in the University of the City of New York, of which he was made chancellor in 1891. Since then the name of the institution has been changed to New York University, and the seat of the University College and School of Applied Science has been re-



moved to University Heights, New York City. Under his administration the Hall of Fame for Great Americans (q.v.) was added to the university, its growth and prosperity greatly increased and the extension of its work and influence has given it a leading position in the field of American education. During Dr MacCracken's active connection with the institution it grew from a college with 91 students to a university with 4,113 students, and the property increased in value from \$547,000 to \$5,211,000. He resigned the chancellorship 28 Sept. 1910. Besides numerous papers on subjects of education, religion and philosophy, he published 'Tercentenary of Presbyterianism' (1870); 'Popular Sermons' (1875); 'Leaders of the Church Universal' (1879); 'John Calvin' (1888); 'Cities and Universities' (1882); 'The Scotch-Irish in America' (1884); 'A Metropolitan University' (1892); 'Educational Progress in the United States' (1893); 'Lives of Church Leaders or Heroes of the Cross' (1900); 'The Three Essentials' (1901); 'The Hall of Fame' (1901); 'Urgent Eastern Questions' (1912).

**MacCRACKEN, Henry Noble**, American educator: b. Toledo, Ohio, 19 Nov. 1880. He is the son of Henry Mitchell MacCracken (q.v.) and was educated at New York and Harvard universities. He was instructor in English at the Syrian Protestant College in 1900-03; Harvard Fellow in 1907-08; instructor and afterward assistant professor of English at the Sheffield Scientific School at Yale in 1908-13. He was professor of English at Smith College in 1913-15, and in 1915 became president of Vassar College. In 1917-18 he was national director of the junior membership in the American Red Cross. He has written for the magazines on philology; has edited 'The Serpent of Division' (1910); 'The College Chaucer' (1913); 'Shakespeare's Principal Plays' (1914), etc. He is author of 'First Year English' (1902); and part author of 'English Composition in Theory and Practice' (1909).

**MacCRACKEN, John Henry**, American educator: b. Rochester, Vt., 30 Sept. 1875. He is the son of Henry Mitchell MacCracken (q.v.), and was educated at the New York University, the Union Theological Seminary and the University of Halle. He was associated with New York University as Fellow, instructor and assistant professor of philosophy in 1894-99; was president of Westminster College, Missouri, in 1899-1903; syndic and professor of politics at New York University in 1903-15; and in 1915-26 was president of Lafayette College, Easton, Pa.

**McCRADY, ma-krä'di, Edward**, American soldier and historian: b. Charleston, S. C., 8 April 1833; d. there, 2 Nov. 1903. He was graduated at Charleston College, admitted to the bar in 1855, and joined earnestly in the movement which led to the secession of his State. He took part in the capture of Castle Pinckney, 27 Dec. 1860, and was present at the bombardment of Fort Sumter in the following April. As captain of the first military company raised in South Carolina for the whole war, he entered the Confederate army, 27 June 1861, was made major and then lieutenant-

colonel, was badly wounded at the second battle of Bull Run (or Manassas), 30 Aug. 1862, and in January 1863 received an injury in camp from a falling tree, in consequence of which he was transferred from field service to the command of a camp of instruction at Madison, Fla., in 1864. He remained at that post until the end of the war. Later he became major-general of State troops and a member of the South Carolina legislature (1880-90), where he proposed the South Carolina Election and Registration Law. Among his more important writings may be mentioned 'The History of South Carolina Under the Proprietary Government, 1670-1719' (1897); 'The History of South Carolina Under the Royal Government, 1719-1776' (1899); 'The History of South Carolina in the Revolution, 1775-1780' (1901); and 'The History of South Carolina in the Revolution, 1780-83' (1902).

**McCRAE, John David**, Canadian physician, soldier and poet. b. Guelph, Ontario, 30 Nov. 1872; d. of pneumonia in France, 28 Jan. 1918. The second son of Lieut.-Col. David McCrae (who organized and took over a battery to France), he was educated at the University of Toronto and took his M.D. degree in 1910. He became Governor's Fellow in Pathology at McGill University; afterwards lecturer in pathology and in medicine. After attaining the M.R.C.P. he was appointed assistant physician to the Royal Victoria Hospital, Montreal, and physician to the Alexandra Hospital. With Professor Adami he was co-author of a textbook on pathology and also contributed to the 'System of Medicine' by Osler and McCrae, the latter being his elder brother (see MCCRAE, THOMAS). He served as a lieutenant of artillery in the South African War, taking part in several important engagements. At the outbreak of the European War he volunteered for service and crossed the sea in September 1914 with the Canadian Field Artillery. He served in the field till after the second battle of Ypres, when he was placed in charge of medicine and second in command of the hospital unit provided by McGill University. Shortly before his death he had been appointed consultant to the British Armies in the Field, but had not yet entered upon that post. McCrae attained the rank of lieutenant-colonel; besides achieving high military, professional and academic distinction, he had earned a creditable reputation as a poet. He did not write much, yet his verses have obtained a permanent place in modern anthologies. One of his best-known works is the now famous lyric, 'In Flanders' Fields,' written during the battle of Ypres and originally contributed to *Punch*. The style is peculiarly his own:

In Flanders' Fields the poppies blow  
Between the crosses, row on row,  
That mark our place, and in the sky  
The larks still bravely singing fly,  
Scarce heard amidst the guns below.  
We are the dead. Short days ago  
We lived, felt dawn, saw sunset glow,  
Loved and were loved; and now we lie  
In Flanders' Fields

Take up our quarrel with the foe,  
To you from falling hands we throw  
The Torch—be yours to hold it high;  
If you break faith with us who die,  
We shall not sleep, though poppies grow,  
In Flanders' Fields.

**McCRAE, Thomas**, American physician: b. Guelph, Ontario, Canada, 16 Dec 1870. He was educated at the universities of Toronto and Göttingen, and in 1904-12 was associate in medicine at Johns Hopkins Hospital, serving as associate professor of medicine of the university in 1906-12. He was professor of medicine at Jefferson Medical College, Philadelphia, and physician to the Jefferson and Pennsylvania hospitals from 1912. He was associate editor of Osler's 'System of Medicine'; was co-author, with Sir William Osler, of 'Cancer of the Stomach' (1900); and assistant author of Osler's 'Practice of Medicine' (1912; new ed., 1918). Died 30 June 1935.

**McCRRARY, George Washington**, American justice and legislator: b. Evansville, Ind., 29 Aug. 1835; d. Saint Joseph, Mo., 23 June 1890. He went with his family to the Wisconsin Territory, now a part of Iowa, when a year old, studied law in Keokuk, Iowa, and was admitted to the bar in 1856. He was elected to the State legislature in 1857, and in 1861-65 served in the State senate where he was chairman of the committees on military affairs and the judiciary. He was a member of Congress from 1869-77, and was appointed to the committees on naval affairs, revision of laws, elections, railways and canals, and the judiciary. He proposed the formation of a joint committee for the purpose of determining the electoral vote in the Hayes-Tilden Presidential election, and was connected with the preparation and passing of the Electoral Bill. He was Secretary of War under President Hayes in 1877-79, when he was appointed justice of the United States Circuit Court. He resigned in 1884 and removed to Kansas City, Mo., where he acted as general consulting attorney for the Atchison, Topeka and Santa Fé Railroad until his death. He is author of 'American Law of Elections' (1875).

**McCREA, Dorothy Frances**, Australian poet and story writer. See **McCREA, GEORGE GORDON**.

**McCREA, George Gordon**, Australian poet: b. Anchorfield, near Edinburgh, Scotland, 29 May 1833. His father went to Australia in 1841 as warden of the Gold Fields of Australia, taking his family with him. Young McCrea was educated privately and entered the Audit Office in 1854. After serving in the office of the chief secretary and the registrar-general, he became senior examiner of patents and deputy registrar-general. He was retired on a pension after 40 years' service. Among his published works are 'Balladeadro and Mamba' (1866-67); 'Karakorok'; 'The Man in the Iron Mask' (1873); 'A Rosebud from the Garden of Taj'; 'Afloat and Ashore' and a vast amount of material the greater part of which still remains unpublished. Among this are two dramas and 'A History of Seychelles' in two volumes. His son, Hugh Raymond McCrea, is an artist and poet well known in Australia; and his daughter, Dorothy Frances, is a clever story writer and a poet of some reputation in Australia. Deceased.

**McCREA, Hugh Raymond**, Australian artist. See **McCREA, GEORGE GORDON**.

**McCREA, ma-kra', Jane**, American Revolutionary heroine: b. Bedminster (now Lamington), N. J., 1753; d. near Fort Edward, N. Y.,

27 July 1777. She was the daughter of a Scotch Presbyterian clergyman, at whose death she went to live with her brother near Fort Edward, N. Y. At the commencement of the Revolution she was betrothed to David Jones, an officer of the Crown. When Burgoyne's army was advancing from the north she was visiting a Mrs MacNeil at Fort Edward. Her brother, sharing the general alarm felt throughout the region, sent for his sister, intending to remove to a safer locality. On the morning fixed upon for her departure, a band of Indians in the employ of Burgoyne suddenly swooped down upon the MacNeil household and they, together with Miss McCrea, were made prisoners. Miss MacNeil and her party arrived in safety at Burgoyne's camp, but half an hour later another party of Indians arrived, bearing a number of freshly severed scalps, one of which bore the long glossy hair of Miss McCrea, whose body was later found by a roadside. The precise manner of her death never became known. The Indians claimed that she was killed by a random shot from an American detachment, whereupon her captors determined to secure the reward for her scalp. It has been surmised that a quarrel arose among the Indians as to whose captive she was and that one of them in a frenzy tomahawked her. Other authorities credit the story that Lieutenant Jones hired the Indians to bring his betrothed to camp where they were to be married and that she was killed in a controversy which arose as to whose captive she was. Lieutenant Jones denied this story; he lived to an old age, a morose and gloomy man. At all events the tragedy caused a general feeling of horror throughout America and England. Burgoyne called a council of his Indian chiefs in order to reprove them, but as his allies would have deserted him the offender was allowed to go unpunished. A blasted pine long marked the spot where tradition relates the beautiful young girl was murdered, and her grave may be seen in a small cemetery near the ruins of Fort Edward. Consult Bascom, R. O., 'The Fort Edward Book' (Fort Edward 1903), and Wilson, D., 'The Life of Jane McCrea' (New York 1853).

**McCREARY, James Bennett**, American lawyer: b. Madison County, Ky., 8 July 1838; d. 8 Oct. 1918. He was graduated at Centre College, Danville, Ky., in 1857, and from the Law School of Cumberland University, Tennessee, 1859. He entered the Confederate army in 1862 as major of cavalry and served until close of war, being then lieutenant-colonel of the 11th Kentucky Cavalry, C. S. A. He was a member of the Kentucky house of representatives in 1869, 1871 and 1873 (being Speaker 1871-73); governor of Kentucky 1875-79, and a member of Congress in 1885-97. He was a delegate to the International Monetary Conference at Brussels, Belgium, in 1891, and in 1903 became United States senator. In 1911-15 he was again governor of Kentucky. He was delegate-at-large to the Kansas City National Democratic Convention and to the Baltimore Convention of 1912.

**McCREERY, James**, American merchant: b. Ireland; d. Aiken, S. C., 1893. He came to the United States when about 20 and engaged in the dry goods business in Baltimore, and at the beginning of the Civil War removed to New



York, where he soon established a business of his own which made him ultimately one of New York's leading merchants. He was a member of many public boards, one of the founders of the silk industry in America and director of numerous commercial enterprises. He was one of the Chamber of Commerce delegation sent to England two years before his death, and was a leading member of various clubs, chiefly of an educational or public character.

**McCULLOCH**, ma-kül'ō, Benjamin, American soldier: b. Rutherford County, Tenn., 11 Nov. 1811, d. 7 March 1862. He became a skilled hunter and boatman and joined other frontiersmen in settling Texas. In 1835 he served in the Texan war for independence, being in the battle of San Jacinto. Later he settled as surveyor at Gonzales and was elected to the Texas Congress in 1839. In the following year he was engaged in fighting the Comanches and operating against Mexican raiders. He also commanded a company of rangers in the Mexican War under Taylor and Scott, did important work as a scout, and was specially distinguished at the battles of Monterey and Buena Vista, and in the siege of the City of Mexico. In 1853 he was appointed United States marshal in Texas. In 1857 he was one of the commissioners appointed to settle the Mormon difficulties in Utah. During the Civil War he served in the Confederate army, was appointed brigadier-general and sent into Missouri, where he was defeated at the battle of Dug Spring, but later united his forces with those of General Price and then defeated the Federals under General Lyon (qv) at Wilson's Creek. He commanded a corps at the battle of Pea Ridge, Ark., where he was killed by a sharpshooter while making a reconnaissance. Consult Reid, S. C., 'Scouting Expeditions of McCulloch's Rangers' (Philadelphia 1859).

**McCULLOCH**, ma-kül'ōh, Hugh, American financier: b. Kennebunk, Me., 7 Dec. 1808; d. near Washington, D. C., 24 May 1895. He was educated at Bowdoin College and went in 1833 to Fort Wayne, Ind., where he established a law practice which he continued until 1835 when he entered a branch of the State Bank of Indiana. He was chosen director in 1836 and in 1857 became president of the newly incorporated State Bank of Indiana. He was appointed Comptroller of the Currency in 1863 and in 1865 became Secretary of the Treasury under President Lincoln. Owing to the enormous expenses incurred by the Civil War, the finances of the country were in a critical condition; in six months the large sum due 500,000 soldiers and sailors was paid together with other heavy expenses, and a reduction of the national debt was begun. McCulloch converted more than \$1,000,000,000 of short-time obligations into a funded debt, and in less than two years had succeeded in putting the finances of the country on a sound basis. Congress approved his course and his plan for a speedy resumption of specie payment, but he met with opposition in his purpose to retire the legal-tender notes. He occupied the office until 1869 and in 1871 opened a banking business in London where he remained until 1878. He was reappointed to the Secretaryship of the Treasury by President Arthur in 1884 and continued in

office until the close of the administration. He wrote 'Men and Measures of Half a Century,' and many of his speeches together with a large share of his correspondence have been published. He was the last living member of Lincoln's distinguished cabinet.

**McCULLOCH**, John Ramsay, English political economist: b. Whithorn, Wigtonshire, 1 March 1789; d. London, England, 11 Nov. 1864. He was educated at Edinburgh; became editor of *The Scotsman*, an Edinburgh newspaper, 1818-20, and from 1818 wrote many articles for the *Edinburgh Review*. He was professor of political economy in London University, 1828-32, and in 1838 was appointed comptroller of the stationery office. Among his many books may be mentioned 'The Principles of Political Economy' (1825); 'Historical Sketch of the Bank of England' (1831); 'Dictionary of Commerce' (1832); 'Geographical Dictionary' (1841); 'A Treatise on the Principles and Practical Influence of Taxation and the Funding System' (1845); 'The Literature of Political Economy' (1845), etc. He was one of the earliest advocates of free-trade in Great Britain.

**MacCULLOUGH**, ma-kül'ōk, John Edward, American tragedian: b. Coleraine, Ireland, 2 Nov. 1837; d. Philadelphia, 8 Nov. 1885. He came to the United States in 1853, studied for the stage and made his début in Philadelphia, 1857. He played with Edwin Forrest, who left him at his death all his manuscript plays. In 1869 he managed, with Lawrence Barrett, the Bush Street Theatre in San Francisco, Cal. His appearance in England in 1881 was not successful, but his popularity in America remained unbroken. Despite his lack of literary education, a serious handicap, he won high rank in his profession. He played De Mauprat to Edwin Booth's Richelieu, and Richmond to his Richard III. His interpretation of Virginius was unexcelled during his day. Among his leading rôles were Hamlet, Macduff, Richelieu, Spartacus, etc. In 1884, at the height of his brilliant career, he suddenly collapsed, both physically and mentally; he died a year later in an insane asylum in Philadelphia. Consult Clark, 'John McCullough as Man, Actor, and Spirit' (Boston 1905).

**McCULLOUGH**, John Griffith, American politician: b. Welsh Tract, near Newark, Del., 16 Sept. 1835; d. 29 May 1915. He was graduated from Delaware College in 1855 and from the law department of the University of Pennsylvania in 1858. He removed to California in 1859, engaged in law practice in Mariposa County, was elected to the State legislature in 1861, to the senate in 1862 and in 1863-67 was attorney-general. In 1867-73 he practised law in San Francisco and then removed to Bennington, Vt., where he became director and president of several railway systems and prominently connected with various banking and commercial enterprises. He was elected to the Vermont senate in 1898 and in 1902 was elected governor of the State.

**McCUMBER**, m'kūm'bér, Porter James, American legislator: b. Crete, Will County, Ill., 3 Feb. 1858. He was graduated at the University of Michigan in 1880 and engaged in the practice of law. He was the senior mem-

ber of the law firm of McCumber and Bogart at Wahpeton, N. Dak (1881-1900). He served in the Territorial house of representatives in 1885-89; was state's attorney, Richland County, in 1896-97. He was elected to the United States Senate in 1899 and re-elected four times. He died 18 May 1933.

**MacCUNN**, mə-kūn', **Hamish**, Scottish composer: b. Greenock, Scotland, 22 March 1868; d. 1916. Was educated in Greenock and at the Royal College of Music, London, made his début in the musical world in 1887, and in 1888 became a junior professor of harmony in the Royal Academy of Music, which position he resigned in 1894. As a composer he attained high rank; his productions are rich in melody, and his command of the orchestra is remarkable. His work is typically Scottish in character and in choice of subject. Among the more important of his numerous works are overtures, etc., 'The Land of the Mountain and the Flood'; 'Chor Mhor'; 'The Dowie Dens o' Yarrow'; 'The Ship o' the Fiend'; dramatic cantatas, 'Lord Ullin's Daughter'; 'Bonny Kilmeny'; 'Lay of the Last Minstrel,' and the operas, 'Jeannie Deans' and 'Diarmid'.

**MacCURDY**, George Grant, American anthropologist: b. Warrensburg, Mo., 17 April 1863. He was graduated from the State Normal School, Warrensburg, 1887; from Harvard, 1893, A.M. in 1894, and thereafter studied at Vienna, Paris and Berlin. Since 1898 he has been connected with Yale University, becoming in 1923 research associate, with rank of professor, and curator of anthropological collections. His publications include 'Some Phases of Prehistoric Archaeology' (1907); 'Antiquity of Man in Europe' (1910); 'Human Origins' (2 vols., 1924); 'Prehistoric Man' (1928).

**McCURDY**, mə-ker'dī, **James Frederick**, Canadian Orientalist: b. Chatham, N. B., 18 Feb. 1847. He was educated at the University of New Brunswick, Princeton Theological Seminary and in Germany. He was assistant professor in Oriental languages at Princeton, 1873-82; and Stone lecturer there in 1885-86. In 1886 he was appointed lecturer in University College of Toronto, and from 1888-1914 was professor of Oriental languages in that college. Among his works are 'Aryo-Semitic Speech' (1881); 'History, Prophecy and the Monuments' (3 vols., 1894-1901); 'Life and Work of D. J. Macdonnell' (1897); an original commentary on Haggai, and various translations for the American edition of 'Lange's Commentary,' etc. He died 30 April 1935.

**McCURDY**, Richard Aldrich, American capitalist: b. New York City, 29 Jan. 1835; d. Morristown, N. J., 6 March 1916. He was graduated at Harvard University in 1856, and engaged in the practice of law in New York. He became attorney for the Mutual Life Insurance Company in 1860, vice-president in 1865 and was president in 1885-1906. The investigation of his company in 1905 revealed mismanagement and gross extravagance, particularly in the matter of salaries for the officials. He resigned and retired in 1906.

**McCUTCHEON**, mā-kūch'un, **George Barr**, American novelist: b. near Lafayette, Ind., 26 July 1866; d. 1928. Educated at private

schools and at Purdue University. After leaving college, before graduation, he became a reporter on the Lafayette *Morning Journal*, at a salary of \$6 a week. Prior to that time he had written a series of dialect letters for the *Sunday Leader*, of Lafayette, under the caption 'Waddleton Mail,' published in that paper in 1890. After three years on the *Journal*, he became city editor of the Lafayette *Daily Courier*, serving in that capacity until June 1902, when newspaper work was abandoned for novel-writing alone. While with the *Courier*, he contributed to that newspaper a serial story entitled 'The Wired End,' which has never been published in book form; and also contributed short stories to various magazines during these years. He went to Chicago to reside in 1902, and in July 1910 removed to New York City.

His novels include 'Graustark' (1901), dramatised; 'Castle Crancycrow' (1902); 'Brewster's Millions' (1903), dramatised; 'The Sherrods' (1903); 'The Day of the Dog' (1904), novelette; 'Beverly of Graustark' (1904), dramatised; 'The Purple Parasol' (1905), novelette; 'Nodra' (1905); 'Cowardice Court' (1906), novelette; 'Jane Cable' (1906); 'The Flyers' (1906), dramatised, novelette; 'The Daughter of Anderson Crow' (1907); 'The Husbands of Edith' (1908), novelette, dramatised; 'The Man from Brodney's' (1908); 'Truxton King' (1909), dramatised, 'A Fool and His Money' (1913); 'Black is White' (1914); 'The Prince of Graustark' (1914); 'Mr. Bingle' (1915); 'The Light That Lies' (1917); 'Shot with Crimson' (1918); 'Sherry' (1918); 'Anderson Crow, Detective' (1920); 'Yolopp' (1922); 'Oliver October' (1923); 'East of the Setting Sun' (1924); 'Romeo in Moon Village' (1925). He was author also of numerous short stories.

**McCUTCHEON**, John Tinney, American cartoonist: b. near South Raub, Ind., 6 May 1870. He is a brother of G. B. McCutcheon (q.v.). He was graduated from Purdue University in 1889 and has been connected with the leading newspapers of Chicago since 1889, his work as a cartoonist becoming famous in the campaign of 1896. He started around the world on dispatch boat *McCulloch* in January 1898; was on board that vessel, during the war with Spain, in battle of Manila Bay 1898. In 1899 he made a tour of special service in India, Burma, Siam and Cochin China and later in northern China, Korea and Japan, returning to the Philippines during the fall campaign there. He followed the various campaigns on the islands until April 1899 when he was sent to the Transvaal. He joined the Boers in the interest of his paper and furnished political cartoons for the Chicago *Record* during the campaign of 1900. In 1909-10 he visited Africa, the while contributing articles and cartoons for the Chicago *Sunday Tribune*. He went to Mexico as special correspondent in 1914; was with the Belgian and German armies in the autumn of the same year, and in France, Saloniki and the Balkans in 1915-16. He has published 'Stories of Filipino Warfare' (1900); 'Cartoons by McCutcheon' (1903); 'Bird Centre Cartoons' (1904); 'The Mysterious Stranger and Other Cartoons' (1905); 'Congressman Pumphrey the People's Friend' (1907); 'In Africa' (1910); 'T. R. in

Cartoons' (1910); 'Dawson '11—Fortune Hunter' (1912), 'An Heir at Large.' In 1931 he was awarded a Pulitzer Prize for the excellence of his cartoons.

**McDANIEL, Henry Dickerson**, American state governor. b. Monroe, Ga., Sept. 4, 1836; d. there, July 25, 1926. He graduated from Mercer University, Macon, Ga., 1856, and was admitted to the bar in 1857. He attended as delegate the Georgia Secession Convention in 1861, and served in the Confederate Army until the end of the war, attaining the rank of major in the 11th Georgia Infantry. In 1865 he was a member of the Georgia Constitutional Convention. He served in the state legislature, 1873-1874, and was state senator, 1874-1883; from 1883 to 1886 he was governor of Georgia.

**McDANIEL, Walton Brooks**, American philologist and educator. b. Cambridge, Mass., March 4, 1871. He graduated from Harvard in 1893. He was assistant in Latin and Greek at Harvard in 1896-1897, instructor there and at Radcliffe College in 1899-1901, and from 1909 was professor of Latin at the University of Pennsylvania. He wrote *Roman Private Life and Its Survivals* (1924); and *Guide for the Study of English Books on Roman Private Life* (1926).

**McDIARMID, mäk-dîr'mîd, Hugh** (pseudonym of CHRISTOPHER MURRAY GRIEVE), Scottish author and poet: b. Langholm, Dumfriesshire, Aug. 11, 1892. An ardent nationalist, he is known as one of the founders of the Scottish Nationalist Party and the editor of *The Voice of Scotland*, a quarterly magazine. Among his works in prose are *Annals of the Five Senses*; *Albyn, or the Future of Scotland*; *Scottish Scene, Scottish Eccentrics*; *The Scottish Islands*; and an autobiography entitled *Lucky Poet*. His volumes of verse include: *Songschaw*, *Penny Wheep*; *A Drunk Man Looks at the Thistle*; *Stony Limits*, *First Hymn to Lenin*; *Cornish Heroic Song for Valda Trevlyn*.

**McDONALD, Andrew Archibald**, Canadian statesman: b. Three Rivers, Prince Edward Island, Feb. 14, 1829; d. March 21, 1912. He entered public life in 1853 as a member of the island assembly, serving until 1858, and again in 1863-1874. He was a delegate to the Quebec Conference on the Union of the Provinces in 1864, and in 1873 became provincial postmaster general, also serving as acting post office inspector until 1884. In 1884-1889 he was lieutenant governor of the province, and from 1891 he was a member of the Dominion Senate.

**MacDONALD, Arthur**, American criminologist and author: b. Caledonia, N.Y., July 4, 1856; d. Washington, D.C., Jan. 17, 1936. He was educated at the University of Rochester and the Princeton and Union theological seminaries, and later studied medicine at Berlin, Leipzig, Paris, Zurich, and Vienna. From 1892 till 1904 he was connected with the United States Bureau of Education as a specialist in possibilities of education for the abnormal and weakling classes. He represented the United States at three international psychological and criminological congresses, and was honorary president of the Congress of Criminal Anthropology, in Europe. He made a special study of American

and European prisons and asylums for the insane and for inebriates. His books include: *Abnormal Man* (1893); *Education and Patho-Social Studies* (1896); *Statistics and Crime, Suicide and Insanity* (1903); *Juvenile Crime and Reformation* (1908); *Mentality of Nations and Social Pathology* (1912).

**MACDONALD, Sir Claude Maxwell**, British soldier and diplomat. b. June 12, 1852; d. London, Sept. 10, 1915. In 1872, after attending the Royal Military College, Sandhurst, he was commissioned 2d lieutenant in the 74th Highlanders. He served in the Egyptian campaign in 1882, and took part in the Suakin expedition, in the eastern Sudan, during 1884-1885; in 1887 he was appointed consul general at Zanzibar. Transferred to West Africa a year later, in 1891 he became the first British administrator in the Oil Rivers Protectorate (which later became the colony of Nigeria). In 1896 he was appointed British minister at Peking (Peiping); he organized the defense of the foreign legations in that city, when they were besieged during the Boxer Rebellion (see BOXERS). June-August, 1900. Appointed in October 1900 Great Britain's first ambassador at Tokyo (previous diplomats holding only the rank of minister), he was responsible in considerable measure for effecting the Anglo-Japanese alliance of 1905.

**MACDONALD, Duncan Black**, American professor of theology. b. Glasgow, Scotland, April 9, 1863; d. Hartford, Conn., Sept. 6, 1943. After graduating from the University of Glasgow in 1885 he studied at the University of Berlin, and came to the United States in 1892, from which date until 1931 he was professor of Semitic languages at Hartford Theological Seminary. He was Haskell lecturer on comparative religion at the University of Chicago, 1906; special lecturer at Wellesley College, 1907-1909; at the Episcopal Theological School, Cambridge, 1912; Lamson lecturer on Mohammedanism at Hartford Theological Seminary, 1909; head of the Mohammedan department at the Kennedy School of Missions, Hartford, 1911-1925; Haskell lecturer, Oberlin College, 1914, lecturer on the Old Testament, Berkeley Divinity School, 1917-1918. He discovered in the Bodleian Library (q.v.) in 1910 the only known Oriental manuscript of *Ali Baba and the Forty Thieves* which he published in the *Journal of the Royal Asiatic Society of Great Britain*, of which he was a member. His writings include *The Development of Muslim Theology* (1903); *Aspects of Islam* (1911); *Hebrew Literary Genius* (1933); *Hebrew Philosophical Genius* (1935).

**MACDONALD, Flora**, Scottish Jacobite heroine: b. Milton, South Uist, Hebrides, 1722; d. Kingsburgh, Scotland, March 5, 1790. She lost her parents early, and was brought up by the chief of her clan, Macdonald of Clanranald; later she was adopted by Lady Macdonald of Skye. After the Battle of Culloden, in 1746, her assistance was sought in securing the escape of Prince Charles Edward, who had taken refuge at Benbecula, where Flora MacDonald was then living. The prince was disguised as a woman servant and the party succeeded in reaching Skye in safety. Flora's assistance to the prince became known, however, and she was imprisoned in the Tower of London, but was soon after-

ward permitted to live outside the prison, although under charge of a jailer. The Indemnity Act of 1747 secured her complete liberty. She was married to Allan Macdonald in 1750, and in 1774 they emigrated to America, settling in Fayetteville, N.C. Her husband served in the British Army in the Revolutionary War, and was taken prisoner. Flora returned alone to Scotland in 1779, and was later rejoined by her husband. She was a woman of great beauty and charm of manner, Dr Samuel Johnson among others, being warm in her praises. Five of her sons served in the British Army or Navy. Consult Ewald, A.C., *Life and Times of Prince Charles Edward* (1886); Macgregor, A., *Flora Macdonald and Her Adventures with Prince Charles* (1901).

**MACDONALD, George**, Scottish poet and novelist: b. Huntly, Aberdeenshire, Dec. 10, 1824; d. Ashted, Surrey, Sept. 18, 1905. He was educated at Aberdeen University and at King's College, London, and entered the Independent ministry, from which he afterward retired and became a lay member of the Anglican Church. Macdonald's work comprised poetry, novels, and religious and juvenile books, and was marked by deep religious feeling and devotion to lofty ideals of life. His novels dealt chiefly with Scottish character and scenery, in which they held the place of classics. The best known of his many books were *David Elginbrod* (1862); *Alec Forbes of Howglen* (1865); *Annals of a Quiet Neighborhood* (1866); *Robert Falconer*, his best work (1868); *The Miracles of Our Lord* (1870); *Malcolm* (1875); *The Marquis of Lossie* (1877); *Sir Gibbie* (1879); *Castle Warlock* (1882).

**MACDONALD, Sir Hector Archibald**, British army officer: b. Muir of Allan-Grange, Ross-shire, Scotland, April 13, 1853; d. Paris, France, March 25, 1903. In 1870 he enlisted in the 92d (Gordon) Highlanders, and for nine years served in the ranks. He first saw active service in the Second Afghan War, in 1879, acquiring himself with such distinction that he was given a commission as second lieutenant. During the Anglo-Boer War of 1880-1881 he was captured at Majuba Hill. He was sent to Egypt in 1884 to aid in reorganization of the Egyptian Army, and took part in the operations on the Nile in 1885 and the Suakin campaign in 1888-1891; for his part in the capture of Tokar in 1891 he was awarded the Distinguished Service Order. During the Dongola expedition of 1896 he commanded a brigade of Egyptian troops, and by his adroit handling of his troops at the Battle of Omdurman, in 1898, he turned into victory what might have proved a disaster. He was promoted colonel that same year, and in 1899, with the rank of major general, he commanded troops in the Punjab Province of India. In December 1899, following outbreak of the South African War (q.v.), "Fighting Mac," as he was popularly termed, was given command of the Highland Brigade, for service under Lord Roberts (see ROBERTS OF KANDAHAR). He captured Koodoesberg early in February 1900, and after Kimberley was relieved, led his Highlanders in a series of engagements which resulted in the surrender at Paardeberg of Gen. Piet Arnoldus Cronjé (q.v.). In 1901 he received a knighthood, and the next year was appointed to command the troops in Ceylon. Recalled to Britain to answer charges against him, he committed suicide in a Paris hotel.

**MACDONALD, Sir Hugh John**, Canadian statesman, son of Sir John Alexander Macdonald (q.v.): b. Ontario, March 13, 1850, d. March 29, 1929. He was educated at Queen's College and at the University of Toronto, became a barrister in 1872, practicing in Toronto until 1882, when he removed to Winnipeg. In 1891-1893, and again in 1896-1897, he was a member of the Canadian House of Commons; and in 1896 he was minister of the interior. He was premier and attorney general of Manitoba in 1900. After 1911 he was police magistrate of the city of Winnipeg, and he also served as commissioner of railways in Manitoba. He served in the Fenian Raid of 1866 and the Red River Expedition of 1870; and in the Northwest Rebellion he was captain of the 19th Regiment. He was knighted in 1913.

**MACDONALD, Jacques Étienne Joseph Alexandre**, Duc de Tarente, French military officer: b. Sedan, Nov. 17, 1765; d. Courcelles-le-Roi, Sept. 7, 1840. Of Scottish descent, he was related to Flora Macdonald (q.v.). He served in the French Revolution as colonel, brigadier general and general. In 1798 he was made governor of the Roman states, and of Naples the following year. In 1805 he lost the favor of Napoleon, but four years later was given command of the right wing of the army in Italy; he was made a marshal for his services at Wagram, July 6, 1809. He served in Spain and in the Russian campaign, assisted in covering the retreat from Leipzig, and in 1814 advised Napoleon's abdication. At the Restoration (q.v.) he gave his allegiance to Louis XVIII. Created a peer of France, in 1816 he became major general of the royal bodyguard; he retired in 1830.

**McDONALD, James**, Canadian statesman and jurist: b. East River, Nova Scotia, July 1, 1828; d. 1912. He was educated at New Glasgow, was admitted to the bar in 1851, and became queen's counsel in 1867. He served in the legislature of Nova Scotia in 1859-1867 and in 1871-1872, when he resigned; and was a member of the Canadian Parliament in 1874-1881. In 1863-1864 he was chief railway commissioner for Nova Scotia, and financial secretary from 1864 until the union with the Dominion of Canada in 1867. He was minister of justice of Nova Scotia in 1878-1881, and chief justice in 1881-1904.

**MACDONALD, James Alexander**, Canadian journalist: b. East Williams, Middlesex County, Ontario, Jan. 22, 1862; d. Toronto, Ontario, May 13, 1923. Nationally known as "Macdonald of the *Globe*," James Alexander was educated at Knox College, Toronto, and in 1891 was ordained to the ministry of the Presbyterian Church. In 1891-1896 he was pastor of Knox Church, St. Thomas, Ontario. In the latter year he founded a religious paper in Toronto, which he called the *Westminster*. In 1902 he became managing editor of the Toronto *Globe*. In this post he acquired a national reputation and great influence and left his mark on Canadian journalism and on Canadian public life. Ill health forced a partial retirement in 1916. He collected many of his papers and addresses in *Democracy and the Nations* (1915) and *The North American Idea* (1917). He also published a memorial volume on William Caven of Knox College (1908).

**McDONALD, James Alexander**, Canadian jurist: b. 1858, Huron County, Ontario; d. Victoria, British Columbia, Dec. 20, 1939. Educated at the University of Toronto, he became a barrister in 1890 and king's counsel in 1906. He engaged in practice in Toronto until 1896 when he removed to Rossland, British Columbia, where he practiced until 1909. In that year he became chief justice of the Court of Appeals, British Columbia, and in 1929 he became chief justice of British Columbia. He retired in 1937.

**MacDONALD, James Ramsay**, British statesman: b. Lossiemouth, Scotland, Oct. 12, 1866. He received an elementary education and became a teacher. In 1884 he came to London where he worked as a clerk for \$3 12 per week. In the capital he continued his education by attendance at evening classes. His experiences led him to embrace Socialism and in 1894 he joined the Independent Labor Party. He was elected to the London County Council in which body he developed his abilities as a public speaker. In 1897, Mr. MacDonald visited the United States and Canada and subsequently visited South Africa, New Zealand, Australia and India. He helped found the Labor Party in 1900. Six years later he was elected to Parliament from Leicester. He opposed Great Britain's entry into the World War, was widely denounced therefor, and in the election of 1918 lost his seat. In 1922 he was re-elected and as head of the Labor Party became leader of the opposition. Following the general election of 1923, the Labor Party expressed its willingness to take office and on Jan. 24, 1924 a Labor Government, the first in British history, took the reins of government, with Mr. MacDonald as Prime Minister and Foreign Secretary. He remained in office until his party suffered defeat in the election of October 1924. He and his party were returned to power in May 1929 and Mr. MacDonald again assumed the Premiership. He visited President Hoover the same year. His government was at once faced with the problem of unemployment and managed to weather many storms until the financial crisis in the summer of 1931 forced a policy of retrenchment on the government in which the rank and file of the Labor Party was unwilling to follow its leader. Mr. MacDonald thereupon formed a "National" government in which he included members of all parties. In the elections of October 1931, the Labor Party suffered a serious setback, but MacDonald headed the new coalition government (Nov. 1931), and continued in office until he resigned, June 7, 1935, because of ill health. Died at sea, Nov. 9, 1937.

**MacDONALD, James Wilson Alexander**, American sculptor: b. Steubenville, Ohio, Aug. 25, 1824; d. Aug. 14, 1908. He studied under Waugh in Saint Louis and in New York in 1849. Among his numerous works are statues of *Joan of Arc*, *Italia*; *Edward Bates*; etc.

**MACDONALD, Sir John Alexander**, Canadian statesman: b. Glasgow, Scotland, Jan. 11, 1815; d. Ottawa, Ontario, June 6, 1891. In early youth he emigrated with his father to Canada. At 21 he was a practising barrister at Kingston, Upper Canada, and in 1844 he was elected to the Canadian Parliament for that constituency. He became a cabinet minister in 1847,

and, after various vicissitudes of his party, Prime Minister in 1857. Macdonald's most important work is connected with the federation of Canada. The French and the English provinces, previously independent, had been united under one Parliament in 1841, and during the next 25 years each party had both an English and a French leader. Ministries changed rapidly, and in 1864 there was a deadlock. This made necessary some wider union; and in that year a conference of delegates met at Quebec to consider the federation of British North America. Directed largely by Macdonald's tact and resource this conference led to the establishment of the Dominion of Canada in 1867, under the British North America Act, passed by the British Parliament. Macdonald became the first Prime Minister of the Dominion. At first there were only four provinces, but he carried through successfully the negotiations by which the Hudson Bay company ceded its interests in the northwest to Canada; he secured also the entrance of British Columbia on the condition of building rapidly a transcontinental railway. During an election in 1872 Macdonald accepted large sums for party purposes from Sir Hugh Allan, one of the chief projectors of the Pacific railway, and in 1873 owing to this "Pacific Scandal" he was forced to retire from office. In 1878 he again became Prime Minister with a policy of protection and he may be regarded as the father of that system in Canada. He remained Prime Minister until his death in 1891. The confederation of Canada, the acquisition by Canada of the Northwest, the building of the Intercolonial and the Canadian Pacific railways, and the policy of protection were all effected under Macdonald's lead. His brilliant intellect and ready wit made him a really great leader. In 1867 he was created K.C.B., in 1884 G.C.B., and on his death his widow was created Baroness Macdonald in her own right. Consult Pope's *Memoirs of Sir John A. Macdonald* (1894); Parkin, *Sir John A. Macdonald in Makers of Canada* (1908). GEORGE M. WRONG,  
Professor Emeritus of History, Univ. of Toronto.

**McDONALD, John Bartholomew**, American engineer and contractor: b. Ireland, Nov. 7, 1844; d. March 17, 1911. He was brought to the United States in 1847, and received his education in the public schools of New York. Among his successful undertakings may be mentioned the Fourth avenue improvement for sinking the New York Central Railroad tracks in New York City from 42d street to Harlem; West Shore Railroad from Weehawken to Buffalo; Baltimore and Ohio Railroad from Baltimore to Philadelphia; Illinois Central Railroad from Elgin, Ill., to Dolgeville, Wis.; the Georgian Bay branch of the Canadian Pacific Railroad; the Trenton "cut-off" of the Pennsylvania Railroad; the Baltimore Belt Railroad, which carried the great Baltimore and Ohio Railroad under the city of Baltimore, etc. He constructed the Jerome Park reservoir, New York City, one of the largest artificial storage reservoirs in the world. His greatest contract was for the construction, equipment, operation and maintenance of the Rapid Transit Railroad (the "Subway") in New York City.

**MACDONALD, John Sandfield**, Canadian statesman: b. Saint Raphael's, Canada, Dec. 12,



1812; d Cornwall, Ontario, 1 June 1872. He was self-educated and admitted to the bar in 1840, practising successfully in Cornwall. In 1841 he was elected to the Canadian Parliament as member from Cornwall. Macdonald was solicitor-general in 1849-51, 1852-54, was speaker of Parliament, Attorney-General in the brief Brown-Dorion administration in 1858, and Premier in 1862-64. He was the first Premier of the province of Ontario, 1867-71.

**McDONALD, Joseph Ewing**, American lawyer. b. Butler County, Ohio, 29 Aug. 1819, d. Indianapolis, Ind., 21 June 1891. He was educated at Ashbury (now De Pauw) University; studied law and was admitted to the bar in 1844, and established a practice in Crawfordsville, where he was county prosecuting attorney, 1845-47. In 1848 he was member of Congress and from 1856-60 attorney-general of Indiana. He then practised law in Indianapolis and in 1864 was an unsuccessful candidate for governor being defeated by Oliver P. Morton. In 1872 he was chairman of the Democratic State Committee and in 1875 was elected to the United States Senate, serving until 1881, when he returned to Indianapolis where he resumed the practice of law.

**MacDONALD, William**, American educator and historian. b. Providence, R. I., 31 July 1863. He was graduated at Harvard in 1892, and in 1892-93 was professor of history and economics at Worcester Polytechnic Institute. He was professor of history and political science at Bowdoin in 1893-1901, from 1901 to 1917 was professor of history at Brown University, and in 1924-26 lecturer on American history at Yale. He edited 'Select Documents Illustrative of the History of the United States' (1898); 'Johnston's High School History of the United States' (1901); 'Documentary Source Book of American History' (1908); Parkman's 'Oregon Trail' (1911). Author of 'A New Constitution for America' (1923); 'The Intellectual Worker and his Work' (1923). D. 15 Dec. 1938.

**MacDONALD, Sir William Christopher**, Canadian capitalist and philanthropist. b. Glenaladale, Prince Edward Island, 1831, d. Montreal, 11 June 1917. He early engaged in business in Montreal and achieved a large financial success as importer, merchant and tobacco manufacturer. He was a director of the Bank of Montreal, a governor of McGill University and of the Montreal General Hospital, and also served as president of the Legislative Council of Prince Edward Island. His gifts to McGill University and the MacDonald Agricultural College connected with it amounted to more than \$12,500,000. He also made large gifts to the normal school at Sainte-Anne de Bellevue, province of Quebec, the Ontario Agricultural College and to different hospitals. He was knighted in 1898.

**McDONALD, Pa.**, borough in Allegheny and Washington Counties; on the Montour, and the Pennsylvania railroads; 18m. SW. of Pittsburgh. A coal-mining and oil field community; a large coal washing plant is located near by. Pop. (1940) 3,530.

**MACDONELL, māk-dōn'ēl, Alexander**, Canadian Roman Catholic prelate. b. Inverness-shire, Scotland, 7 July 1762; d. Dumfries, Scotland, 14 Jan. 1840. He was educated at

the Scots College, Spain, entered the priesthood in 1787, and was for several years a missionary. He assisted in the organization of the Glengarry Fencibles and was their chaplain and in 1803 established for its disbanded members a colony in Glengarry County, Ontario, Canada. He also assisted in raising the Canadian regiment of Glengarry Fencibles, which was actively engaged in repelling the American invaders in the War of 1812-14. In 1819 he was made vicar apostolic of Upper Canada and through his influence 48 parishes were established in Upper Canada. He was the first Roman Catholic bishop in Upper Canada, being consecrated bishop of Kingston, 14 Feb. 1826. He was called to the Legislative Council in 1831. He died in Scotland while on a mission to obtain funds for the founding of Regiopolis College, Kingston, and is buried in his episcopal city.

**MacDONELL, Arthur Anthony**, English philologist. b. Lochgarry, 11 May 1854; d. 28 Dec. 1930. He was educated at Göttingen and at Corpus Christi College, Oxford. He was teacher of German at Oxford in 1880-99 and professor of Sanskrit in 1888-99, after which he was Boden professor of Sanskrit there. He made a tour of study and research in India in 1907-08, and in 1914 received the Campbell Memorial Gold Medal for Oriental Research from the Royal Asiatic Society of Bombay. He was keeper of the Indian Institute; and a Fellow of Balliol College and of the Royal Danish Academy. Author of 'Sanskrit-English Dictionary' (1892); 'A History of Sanskrit Literature' (1900); 'The Bṛhaddevata' translated and critically edited (2 vols., 1904); 'Vedic Grammar' (1910); 'A Vedic Grammar for Students' (1916); 'India's Past' (1926).

**MacDONELL, Daniel James**, Canadian clergyman. b. Bathurst, New Brunswick, 15 Jan. 1843; d. 1896. He was graduated at Queen's College, Kingston, in 1858 and later studied at Glasgow, Heidelberg and Edinburgh universities. He was ordained in the Presbyterian ministry, at Edinburgh, in 1866, returned to Canada and served as minister of Saint Andrew's Church, Peterborough, until 1870, when he removed to Toronto to take charge of the imposing new Saint Andrew's Church which had been built for him there. His expression of doubt in regard to certain doctrines of the Church, particularly that of eternal punishment, led to his being tried for heresy. While not subscribing to a personal belief in the doctrines upon which he had expressed doubts he formally endorsed them and agreed not to discuss them in the pulpit. His influence generally was regarded as having contributed appreciably to a broader trend of thought in the Church. He took an active part in bringing about the union of the different branches of the Presbyterian Church in Canada, which was effected in 1875. He was noted for his sound learning and for his eloquence. He was one of the editors of the 'Canadian Presbyterian Hymnal' (1878-81).

**MacDONNELL, Anthony Patrick**, 1st Baron. b. 17 March 1844, d. London, England, 9 June 1925. He was educated at Queen's College, Galway, and entered the Indian Civil Service in 1865. He was appointed acting chief commissioner of Burma in 1889, chief commis-



sioner of the Central Provinces in 1891, acting lieutenant-governor of Bengal in 1893, and served on the council of the viceroy of India in 1893-95. He was lieutenant-governor of the Northwestern Provinces and chief commissioner of Oudh in 1895-1901, was a member of the Council of India in 1902, and Under Secretary of State in Ireland in 1902-08. He was created a baron in 1908.

**McDONNELL, Charles Edward**, American Roman Catholic prelate: b. New York, N. Y., 1 Feb. 1854; d. 8 Aug. 1921. He was educated at the De La Salle Institute and Saint Francis Xavier's College in New York and studied theology at the American College, Rome, Italy, where he received the degree of D.D., and was ordained priest by Bishop Chatard 18 May 1878. Returning to America the same year, he was appointed assistant at Saint Mary's Church, New York City, and in 1879 was transferred to Saint Patrick's Cathedral. On the death of Bishop Loughlin, Dr. McDonnell, who, at the time was Archbishop Corrigan's secretary, was named bishop of Brooklyn, being consecrated by Archbishop Corrigan 25 April 1892. At his invitation the Benedictine Fathers came from the Bahama Islands to establish themselves in his diocese, and the Redemptorists also made a foundation in Brooklyn. On the passage of the French law separating Church and State, Dr. McDonnell invited a number of French communities of men and of women to take up their residence in his diocese. He was spiritual adviser of the Catholic Benevolent Legion, and also honorary president of the International Catholic Truth Society.

**McDONOGH, māk-dōn'ō, John**, American philanthropist: b. Baltimore, Md., 29 Sept. 1779; d. McDonogh, La., 26 Oct. 1850. He was educated at an academy in Baltimore and entered the mercantile business there, removing in 1800 to New Orleans, where he rapidly acquired great wealth. He was deeply interested in the problem of slavery and devised a system through which his slaves were enabled to earn their freedom, he educated those among them who desired it, and sent to Africa shiploads of those who had earned their freedom. He was president of the American Colonization Society and was a generous contributor to its support. The bulk of his fortune of more than \$2,000,000 he bequeathed to the cities of New Orleans and Baltimore for the establishment of free schools. The will was adjudged valid after years of litigation and Baltimore established the McDonogh schools while New Orleans invested its portion of the bequest in its public schools.

**MACDONOUGH, māk-dōn'ō, Thomas**, American naval officer: b. Newcastle County, Del., 23 Dec. 1783; d. at sea, 18 Nov. 1825. He entered the navy as midshipman in 1800 and in 1803 was attached to the frigate *Philadelphia*, one of the squadron employed against Tripoli. On 26 Aug. 1803 the *Philadelphia* captured off the coast of Spain the Moorish frigate *Mesboa* and MacDonough, being left at Gibraltar with the prize, escaped the subsequent capture which befell the officers and crew of the *Philadelphia*. In 1804 he participated in the various attacks made upon Tripoli and under

Decatur assisted in the capture and destruction of the *Philadelphia*, 16 Feb. 1804. In 1810 he was furloughed and for a while commanded a vessel in the merchant service. On the outbreak of the War of 1812 he was for a time first lieutenant on the *Constitution*, and commanded for some months at Portland. In 1814 he had command of the squadron on Lake Champlain which gained an important victory at Plattsburg harbor over the British squadron commanded by Commodore George Downie. For his valuable services on this occasion he was promoted to the rank of captain, then the highest in the United States navy, and received from Congress a gold medal and an estate at Cumberland Head, near Plattsburg, from the Vermont legislature. He afterward held various commands, the last of which was on the *Constitution* in 1824, in which he made a cruise to the Mediterranean. Consult Babcock, K. C., 'Rise of American Nationality' (New York 1906).

**MACDOUGALL, mak-doo'gal, Daniel Tremby**, American botanist: b. Liberty, Ind., 16 March 1865. He was graduated at De Pauw University in 1890 and studied in Germany. In 1891-92 he was engaged in explorations in Arizona and Idaho for the United States government, and in 1893-99 was instructor in plant physiology at the University of Minnesota. He was appointed director of the laboratories of the New York Botanical Gardens in 1899, and after 1905 was director of the botanical research department of the Carnegie Institution. He was president of the American Society of Naturalists in 1910. Among his books are 'Nature and Work of Plants' (1900); 'Practical Text-book of Plant Physiology' (1902); 'Elementary Plant Physiology' (1902); 'Influence of Light and Darkness upon Growth and Development' (1903); 'Botanical Features of North American Deserts' (1908); 'The Water-Balance of Succulent Plants' (1910); 'The Condition of Parasitism in Plants' (1910); 'Organic Response' (1911); 'The Salton Sea' (1913); 'Growth in Trees' (1924).

**McDOUGALL, Alexander**, American soldier: b. Island ofIslay, Scotland, 1731; d. New York, 8 June 1786. He emigrated with his father to America in 1755 and later became a merchant in New York. He devoted himself to the cause of the colonies and was imprisoned for a time for writing an address called 'A Son of Liberty to the Betrayed Inhabitants of the Colony.' At the outbreak of the Revolution he enlisted in the American army, serving as colonel, brigadier-general, and in 1777 was promoted major-general. He commanded at Long Island, White Plains and also attained distinction in the action at Germantown. He was elected member of the Continental Congress in 1781 and was for a time Minister of Marine. Re-elected in 1784-85 he served for a time and then resigned, preferring active service in the field. He was elected Minister of Marine and thereby became the first Secretary of the United States Navy. He was a member of the New York State senate at his death.

**McDOUGALL, George Millward**, Canadian pioneer missionary: b. Kingston, Ontario, 1820; d. Canadian North West, January 1876. He removed to Georgian Bay with his parents when a child, later studied at Victoria College,

and in 1850 entered the Wesleyan Methodist ministry. He was deeply interested in the welfare of the Indians, whose habits and character he knew thoroughly, and spent his life as a missionary among them. His field covered at different times a considerable portion of the Northwest Territory and his experience made him often a valuable aid to the government in dealing with Indian affairs. He made a tour of eastern Canada and visited New York and Great Britain in 1875. His career was suddenly ended by his death on the plains within a short distance of his camp. He is commonly reputed to have perished in a snowstorm; but his son, who was with him on the journey toward camp, ascribes the end to some unknown physical infirmity as the weather was favorable and his father a master woodsman. McDougall is among the most famous of the pioneer missionaries of Canada. Consult McDougall, J., 'George Millward McDougall, Pioneer, Patriot and Missionary' (Toronto 1888).

**McDOUGALL, John**, Canadian missionary, son of George Millward McDougall (q.v.). b. Owen Sound, Ontario, 27 Dec. 1842. He was educated at Victoria University, entered the Methodist ministry in 1866 and was ordained in 1872. He was reared among the Indians of the Georgian Bay and Lake Superior regions and before entering the ministry he taught school in the North Western Territory. As a clergyman his work was chiefly among the Indians, where his knowledge of their language and customs made his work unusually effective, and he was also able to render important services to the government in connection with Indian affairs. He was peace commissioner after the uprisings of 1869-70 and 1885. He was also closely associated with the treaties made with the Indians in his district. He was chairman of the Saskatchewan district in 1876 and of the Indian district in 1897. Author of 'A Cree Hymn Book' (1888); 'Forest, Lake and Prairie' (1895); 'Saddle, Sled and Snowshoe' (1896); 'In the Days of the Red River Rebellion' (1900); 'On the Western Trail in the 'Early Seventies' (1902). D. 15 Jan. 1917.

**MacDOUGALL, Sir Patrick Leonard**, British general and military author: b. Boulogne-sur-Mer, France, 10 Aug. 1819; d. Kingston Hill, Surrey, 28 Nov. 1894. He was educated at the military academies of Edinburgh and Sandhurst and received his commission as second lieutenant in 1836. He served as regimental officer with the Royal Canadian Rifle regiment at Toronto and at Kingston in 1844-54; served as superintendent of studies at Sandhurst the following year, and in 1855 was sent on a special mission to the Crimea. He was again superintendent at Sandhurst in 1856-58. He was appointed adjutant-general of the Canadian militia in 1865, took an active part in the suppression of the Fenian Raid of 1866 and received high commendations for his skilful organizing of the militia. In 1873-78 he was head of the intelligence branch of the War Office. He was again appointed to the command in Canada in 1878, at the time when relations were strained between England and Russia. He volunteered to organize a body of 10,000 trained soldiers for use whenever and wherever they might be needed, and the acceptance of his offer established the precedent of colonial mili-

tary aid to the empire in time of need. He retired from active service in 1885. Author of 'The Theory of War' (1856); 'Modern Warfare as Influenced by Modern Artillery' (1864); 'The Army and Its Reserves' (1869), etc.

**McDOUGALL, William**, an Anglo-American psychologist: b. Lancashire, England, 1871. He studied at Owens College, Manchester, and at Oxford, Cambridge and Gottingen universities. In 1914, at the outbreak of the World War, he was reader in mental philosophy and fellow of Corpus Christi College, Oxford. During the war, he was attached to the medical service of the British army, and at its close returned to Oxford. In 1920 he was called to Harvard University to become head of the department of psychology. He remained there until 1927 when he accepted the chair of psychology at Duke University, Durham, N. C. His published works deal chiefly with the problems of national psychology which involve ethical theory, and cannot be discussed in terms of mere science. D. Durham, N. C., 28 Nov. 1938.

**MacDOWELL, mäk-dow'el, Edward Alexander**, American composer: b. New York, 18 Dec. 1861, d. there, 23 Jan. 1908. MacDowell was Scotch-Irish by birth, if not by training and temperament. It was from his father, a man of pronounced artistic tastes, that the composer inherited or acquired that fine æsthetic sense and that highly sensitive artistic tendency which played so great a part in his life and practically determined the character of his work. MacDowell's musical education was begun at the age of eight, when Juan Buitrago, a friend of the family, gave him his first piano lessons. But not being at all precocious—MacDowell was no musical prodigy—his early progress was neither rapid nor encouraging. It was not until he came to receive instruction from the professional piano teacher, Paul Desvernine, with occasional supplementary lessons from the famous virtuoso, Teresa Carreño, that MacDowell's great musical gifts became manifest. Then, at the age of 15, the lad was taken abroad by his devoted mother for a thorough musical education. Entering the Paris Conservatory, young MacDowell studied for two years under the two eminent music masters, Marmontel (piano) and Savard (theory and composition). Going next to Germany, he continued his musical studies at the Stuttgart and Frankfort conservatories, studying piano with Karl Heymann and composition with Joachim Raff, the well-known German composer. MacDowell's unusual talent so impressed both his German teachers that in 1881 they warmly recommended their American pupil for the university chair left vacant by Heymann's own resignation. Nothing but his extreme youthfulness (MacDowell was only 20 at the time) seems to have kept from him this much coveted Frankfort professorship. Failing of this, MacDowell accepted an instructorship at the Darmstadt Conservatory. But his duties as principal piano instructor there were so onerous and his compensation so inadequate that he soon had to resign from this position. Returning to Frankfort, MacDowell devoted himself to composition and private teaching.

It was there, at Frankfort, during his student days, that MacDowell's career as a composer really began. His 'First Modern Suite

for Piano' so impressed the great Liszt, whom MacDowell was induced by Raff to visit at Weimar in 1882, that he had it performed the same year at the Allgemeiner Deutscher Musikverein festival held at Zurich. A year later this suite and its successor, 'The Second Modern Suite,' were published by the famous Leipzig music publishers, Breitkopf and Hartel. Thus encouraged by his early success, and more especially by the sincere praise of Raff, Liszt and others, MacDowell resolved to settle in Germany permanently. And, save for a short visit to America in 1884 (when he married a former pupil of his, Marian Nevins), he did live there uninterruptedly for 12 years. In 1888 MacDowell returned to America and settled in Boston, which marks a turning point in his life. His European recognition, both as pianist and as composer, naturally had paved the way for his American successes. Almost immediately on his arrival MacDowell made his first public appearance in America in the double capacity of pianist and composer, performing one of his own compositions at a Kneisel Quartet concert (19 Nov. 1888). Shortly after he played his 'Second Piano Concerto' under Theodore Thomas at New York, winning such success with this composition and its performance that he soon repeated it with the Boston Symphony Orchestra. Thenceforth MacDowell's rise to fame was phenomenal. His services as pianist were in great demand—far greater than his virtuoso ambitions—while his orchestral compositions were performed almost as soon as they were written. Between 1890, when his symphonic poem, 'Lancelot and Elaine,' was performed by the Boston Symphony Orchestra, and 1896 when the same organization placed both his 'Indian Suite' and his 'Piano Concerto' on the same program—which was a most signal honor for a new composer—MacDowell's name appeared prominently and frequently on American orchestral programs. In 1891-92, too, he gave his first piano recitals which further enhanced his American fame. A couple of years later (14 Dec. 1894) MacDowell achieved unprecedented success by his performance, with the Philharmonic Society at New York, of his own 'Second Concerto for Piano and Orchestra.' By 1896, then, his name and fame as pianist and composer were fully established in America, if not also in Europe.

That year another important turning point in MacDowell's life was reached. Accepting the chair of music in the then newly-created music department at Columbia University, MacDowell plunged into teaching with such zeal and energy—devoting almost all his time and vitality to his arduous task—that eight years of it (1896-1904) was enough to undermine his health beyond repair. In 1905, one year after MacDowell had resigned his Columbia professorship (owing to a disagreement with the faculty as to the proper place of music in the college curriculum), alarming symptoms of a mental disorder appeared, which soon culminated in hopeless insanity. In this sad state MacDowell lingered till 23 Jan. 1908, when he died in New York, in his 47th year.

The list of MacDowell's compositions is a long one. His works extant (the composer himself, in a moment of ruthless self-criticism, destroyed a number of his compositions) include two suites for orchestra (the 'Indian

Suites' Nos. 1 and 2), which are his most pretentious and best-known orchestral compositions; two concertos for piano and orchestra, which rank among the best of their kind; four sonatas for piano (the 'Norse,' the 'Keltic,' the 'Eroica' and the 'Tragica'), which alone would have made any composer famous; five symphonic poems ('Hamlet and Ophelia,' 'The Saracens,' 'Lamia,' 'Lovely Alda' and the 'Lancelot and Elaine,' already mentioned), which possess much originality and considerable melodic charm; two most delightful piano suites (the 'Woodland Sketches' and the 'Sea Pieces'), which contain some of MacDowell's most popular and fascinating shorter pieces, and numerous songs of charming simplicity and melodiousness.

As may be inferred from his musical titles, MacDowell is a romantic composer. His music is program music of the poetic, not the descriptive, kind; for MacDowell does not delineate objects, but rather the moods aroused by them. A pupil and disciple of Raff, MacDowell frequently gives his music the woodland flavor. Such titles as 'Forest Idyls,' 'New England Idyls' and 'Woodland Sketches,' among others too numerous to mention, clearly indicate that MacDowell is the Wordsworth of music. His lyrical pieces show the unmistakable influence of Grieg, whose music the American composer greatly admired; while as a romanticist he should be classed with Schumann and Mendelssohn. Consult Gilman, Lawrence, 'Edward MacDowell' (New York 1909), and Page, E. F., 'Edward MacDowell; His Work and Ideals' (ib. 1910).

**McDOWELL, Ephraim** ('FATHER OF OVARIOTOMY'), American surgeon: b. Rockbridge County, Va., 11 Nov. 1771; d. Danville, Ky., 20 June 1830. He studied medicine at Staunton, Va., and at the University of Edinburgh, then the most famous medical institution in the world. He established himself in practice at Danville, Ky., and became known throughout the Southern and Western States as the best surgeon in his part of the country. In 1809 he performed the hitherto unknown operation of extirpation of the ovary with complete success, and twice repeated the feat before he made an official report of the cases in 1816. His delay in reporting the first case and the seeming impossibility of the performance subjected him to considerable criticism in high quarters both at home and abroad. However, the fact of the success of the operation, several times repeated, is fully substantiated and the method he conceived and carried out has been but little modified, with the exception of asepsis and the use of anæsthetics. In lithotomy he had operated 22 times before 1828 without a fatality. Author of a report of his most famous cases in the *Eclectic Repertory and Analytic Review* (1817). Consult Gross, S. D., 'Origin of Ovariectomy' (1853); Jackson, J. B., 'Biographical Sketch of Ephraim McDowell' (1873); Letcher, J. H., 'Memoir of Ephraim McDowell' (1875).

**McDOWELL, Irvin**, American soldier: b. near Columbus, Ohio, 15 Oct. 1818; d. San Francisco, Cal., 5 May 1885. He studied at the College de Troyes, France, and was graduated at West Point in 1838. During the Canadian troubles he was stationed on the Niagara

and on the Maine frontiers, and in 1841 served at West Point as assistant instructor in tactics, becoming adjutant in 1845. In 1845 he went to Mexico as aide-de-camp to General Wood and for gallant conduct at Buena Vista in 1847 was promoted brevet captain, shortly afterward attaining the rank of assistant adjutant-general. Subsequently he was stationed at the War Department in Washington and in 1856 was raised to the rank of brevet major. He was on General Wood's staff at the outbreak of the Civil War and assisted in inspecting and organizing the volunteer troops at Washington. In May 1861 he was made brigadier-general of the volunteers and given command of the Army of the Potomac. Constrained by the impatience of the North, McDowell moved in July to meet the enemy and despite his carefully laid plan met a disastrous defeat at Bull Run, 21 July 1861, owing to the imperfect organization of his raw recruits. Shortly after McClellan was given command of the army and McDowell was retained at the head of one of its divisions. In 1862 he was promoted major-general of volunteers and placed in command of the First corps, which became the Army of the Rappahannock, stationed to guard Washington. In August 1862 he received command of the Third corps of the Army of Virginia and fought under General Pope at the battles of Cedar Mountain, Rappahannock Station and the second battle of Bull Run, where he performed especially good service. He was removed from the field in September 1862. Considering this action of the War Department a direct reflection upon his military services, he asked for an investigation, the result of which was favorable to him. From May to July 1863 he was president of a board appointed to investigate alleged cotton frauds, and during the following 10 months presided over the board for retiring disabled officers. In July 1864 he was placed in command of the Department of the Pacific Coast, and in March 1865 was made brevet major-general in recognition of his gallant services at Cedar Mountain. In 1872 he succeeded General Meade as major-general in the regular army and was in command of various military departments until 1882, when he was retired. The last years of his life were spent in California.

**McDOWELL, James**, American statesman: b. in Rockbridge County, Va., 1796; d. 1851. He was graduated at Princeton in 1817; in 1831 was elected to the Virginia legislature; was governor of that State, 1842-44, and from 1847 to 1851 represented it in Congress. He favored the gradual abolition of slavery, although advocating the claim of State rights. As orator and debater in Congress he bore a prominent part in the proceedings of that body leading up to the Compromise of 1850.

**McDOWELL, William Fraser**, American M. E. bishop: b. Millersburgh, Ohio, 4 Feb. 1858; d. 26 April 1937. He was educated at the Ohio Wesleyan and Boston universities and was ordained in the Methodist ministry in 1882. He held pastorates at Lodi, Oberlin and Tiffin, Ohio, and in 1890-99 he was chancellor of the University of Denver. He was corresponding secretary of the board of education of the Methodist Church in 1899-1904 and was elected bishop in 1904. He was Cole lecturer at Vanderbilt Uni-

versity in 1910, served as international commissioner of the Y. M. C. A. after 1899 and from 1906 was president of the board of trustees of Northwestern University. He made an official tour of India, China, Japan and the Philippines in 1910-11. Author of 'In the School of Christ' (1910); 'Good Ministers of Jesus' (1917); 'Making a Personal Faith' (1924).

**MACDUFF**, mäk-düf', Scottish thane, or Earl of Fife, a half-mythical personage, commemorated in Shakespeare's play, 'Macbeth.' He is said to have been the principal agent in the overthrow of the usurper Macbeth and the restoration of Malcolm Canmore to the throne of Scotland. For this he was granted many privileges, among them that of a place of refuge to which he and his descendants could flee in case of committing unpremeditated murder. This sanctuary, in the form of a cross, stood till 1559, near Newburgh in Fife, in the pass leading to Strathearn. It was then demolished by the Reformers, but its pedestal yet remains.

**McDUFFIE**, mäk-düf'i, **George**, American statesman and orator: b. in Columbia (now Warren) County, Ga., 1788; d. in Sumter District, S. C., 11 March 1851. He was graduated at South Carolina College in 1813, admitted to the bar in 1814 and in 1818 elected to the South Carolina legislature. From 1821 to 1834 he was a member of Congress, and from 1834 to 1836 governor of South Carolina. In 1843 he took his seat in the United States Senate, resigning on account of impaired health in 1846. In his political views and in his Congressional career, he was a close follower of J. C. Calhoun (q.v.), being at the outset a liberal constructionist in constitutional questions, but afterward becoming a strong opponent of the tariff and other economic policies of the government, and also a bold advocate of nullification. Although a supporter of Andrew Jackson (q.v.) in 1828, he became bitterly antagonistic to him, not only in respect to the tariff and State rights, but especially so on the question of the United States Bank, which, as chairman of the Committee on Ways and Means, he strongly defended against the hostile policy of the President. In 1832, as a member of the South Carolina Nullification Convention, he drafted the address of South Carolina to the people of the United States. He was one of the ablest orators of his day, and his prominence in public affairs was maintained in spite of an early wound received in a duel, from which he suffered for the remainder of his life.

**MACÉ**, Jean, zhôn mã-sã, French educator and writer: b. Paris, France, 22 April 1815; d. there, 13 Dec. 1894. He was educated at the Collège Stanislas, served in the French army, 1842-45, was editor of *La République* in 1848 and as such was a strong supporter of the Revolution of that year. In 1851, on the *coup d'état*, he had to withdraw from Paris, and subsequently taught school in Alsace for 10 years. In 1866 he founded a league of instruction in the Belgian manner. He was decorated with the Legion of Honor in 1880, and elected senator in 1883. He was the author of many popular books for young people, the aim of which was mainly educational, among them his best-known work, 'Contes de petit-chateau' (1862), called in the English translation 'Home Fairy Tales'; 'History of a Mouthful of Bread' (1861);

'Servants of the Stomach' (1866); 'France Before the Franks' (1881).

**MACE** (Lat *macv*, Greek *μάκερ*, an East Indian spice), an aromatic spice made from the arillode or false aril which covers the seed of a nutmeg (*Myristica fragrans*). The yellow external covering of the nutmeg (qv) being removed, the red, rather fleshy, arillode which partially conceals the nutmeg is encountered. After drying in the sun for several days this becomes more or less translucent and usually orange yellow and waxy. In this form it is largely exported from the Spice Islands, where it is native, and from the West Indies, where it has been introduced into cultivation. The powerful but agreeable nutmeg-like odor and flavor characteristic of it are due to a volatile oil which is obtained by distillation for use in perfumery and culinary articles. A butyry fixed oil obtained by expression is used after the admixture of the volatile oil under the names nutmeg balsam and nutmeg butter. White mace is obtained from *M. obova* and red mace from *M. turgens*; also a low grade from *M. fatua*, but this is rarely found in the market. Mace is also largely used whole or ground in cookery.

**MACE**, a weapon of war formerly in use in Europe, chiefly among the cavalry, as late as the 16th century, and still used among savage tribes. It consists merely of a staff about five feet long, with a knob at the end. In England the mace is used as an emblem of the officers of state, before whom it is carried. It is made of the precious metals, or of copper, gilt and ornamented. A mace is also carried by the Sergeant-in-Arms of the House of Representatives and it is placed to the right of the Speaker.

**MACEDO**, Joaquim Manoel de, hō-ä-kēn' ma-noo-el dā ma-sā-dō, Brazilian poet, novelist and statesman: b. São João d'Itaborahi, 24 June 1820; d. Rio de Janeiro, 11 April 1882. He studied medicine, but presently began to write and became professor of national history in the College of Dom Pedro at Rio de Janeiro. He was one of the most prominent of Brazilian authors in the 19th century, and being keenly interested in politics was elected to the Brazilian Chamber in 1854. His works include 'Moreninha,' a novel (1844; 5th ed, revised, 1877); 'O Moço Louro,' a novel of the early stages of the Portuguese conquest (1845); 'O Dous Amores' (1848); 'Vicentina' (1853); 'A Nebulosa,' a poem (1857), his greatest work, consisting of six cantos in unrhymed hendecasyllables; 'Cobé,' a drama; 'Fantasma Branco,' a comedy (1856); 'Nociones de cronografia do Brasil' (1873; translated into French by Halbout), etc.

**MACEDO**, José Agostinho de Padre, Portuguese poet and author: b. Beja, 1761; d. 1831. He received his education in Latin and rhetoric under the Oratorians at Lisbon and became a member of the Augustinian Order in 1778. Temperamentally unfitted for a monastic life he failed to conform to the discipline of the order and in consequence was imprisoned in one convent or another the greater share of the time. He eventually abandoned the monastery and his subsequent excesses caused him to be unfrocked in 1792. Intercession on the part of influential friends, however, secured

for him a papal brief which secularized him but restored his ecclesiastical status. He then entered journalism and his preaching gained for him a foremost position among the orators of his day. In 1802 he was appointed a court preacher. He established and contributed to a large number of journals and was famous for his keen satire and wit, although he also gained the reputation of being the "Chief libeller of Portugal." He was a staunch adherent of absolutism and seriously advocated the massacre of all opponents of Miguel. He was censor of books in 1824-29, when he resigned upon being threatened with proceedings by his own political party, his support having become harmful to its interests. He had gained a considerable reputation through his verse, which introduced into Portugal didactic and descriptive poetry, and his 'Meditation' (1813) was a notable production. His ambition then led him to covet the place held by Camoens as Portugal's leading poet, and in 1814 he published 'Oriente' for which he unwisely chose the subject of Camoens' 'Lusiads,' the discovery by Gama of the sea route to India. While the verse itself was not without strength and grace the epic, as a whole, was flat and insipid, and failed utterly to cause its author to outshine Camoens. Macedo then published his 'Censura dos Lusiados,' in which he bitterly attacked Camoens, and brought upon himself Bocage's scathing 'Pena de Talião.' His 'Os Burros' is no less pitiless in its betrayal of his own evil character than shameless in its exhortation of men and women in all grades of society, living or dead. He translated the 'Odes' of Horace and made several attempts at drama but these are not particularly notable. He was at his best in his odes to Wellington and to Alexander, and in the verse in his 'Lyra anacreontica.' There is some doubt concerning 'A Demonstration of the Existence of God' as being from his pen, but it is usually credited to him and shows high ability. He was notorious for his ingratitude, and merciless in his satire, but he died with many friends and a great reputation, although his fame was of brief duration. Consult T. Braga's edition of 'Memorias para la vida intima de José Agostinho de Macedo' (1899); 'Cartas e opusculos' (1900).

**MACEDONIA**, mäs-ë-dō-ni-ä, a territory in the Balkan Peninsula (qv.). Never having had a separate existence as a political or administrative unit in modern times, it has no precisely defined boundaries. The territory generally considered to be within Macedonia (approximately 25,000 square miles) is bounded on the east by the Mesta River and the Rhodope Mountains, on the north by the Rila Mountains and the Crna Gora, on the west by the Shar Mountains and the Ohrid-Prespa lake district, and in the south by the Vistritsa (Haliakmon) River and the Aegean Sea. It is a mountainous area except in its southern and eastern sectors, which are the most productive agricultural lands in modern Greece. The strategic significance of Macedonia has been great throughout the course of history, for it is crossed by two major European trade routes which link the Aegean Sea with central Europe and with the Adriatic. These routes meet near the mouth of the Vardar River at the port of Salonika (Thessalonike),



the only large city in Macedonia. It is the natural commercial port for the trade of a large part of the Balkan Peninsula. In the low-lying areas of eastern and southern Macedonia near Salonika the chief crops are cereals and tobacco, of which a considerable surplus is produced for consumption outside Macedonia. In the northern and western parts the climate and the economy are like those of the neighboring areas of the central Balkan Peninsula; crop yields, principally cereals, are low and living standards are near the subsistence level.

In ancient times Macedonia was a monarchy which had its beginnings in the coastal area at the head of the Thermaic Gulf, now the Gulf of Salonika (Thermaikos). King Philip II of Macedonia in the 4th century B.C. extended his kingdom to include all the territory now known as Macedonia, including the Peninsula of Chalcidice (Khalkidike). The district which he conquered from Thrace, lying between the Strymon (Struma) and the Nestos (Mesta) rivers was called *Macedonia adjecta*. Under Philip and his son, Alexander the Great, Macedonia conquered all of Greece and then the greater part of the civilized world. After Alexander's death in 323 B.C., the immense Macedonian Empire was divided; in 197 B.C., after a resounding defeat in battle by the Romans, Macedonia lost even its dominion over Greece and returned to its ancient limits. After further military defeats it became a Roman province in 146 B.C. As such it is mentioned in the New Testament, and Saint Paul's letters to the Thessalonians and Philipians are addressed to Macedonian Christians. In 395 A.D. Rome lost possession of Macedonia and it became a part of the Byzantine Empire, which held it, except for intervals when it fell under the control of the Bulgars and the Serbs, until the conquering Ottoman Turks wrested it from the feeble Byzantine emperors in the 14th and 15th centuries.

The earliest known inhabitants of Macedonia stemmed from two major groups, the Thracians and Illyrians, apparently with a large admixture of Dorians. Migrations during the course of the Middle Ages completely changed the character of the population. By the time of the Turkish conquest the original inhabitants had been pushed out or absorbed by the masses of Slavs who settled in Macedonia. The province had become predominantly Slavic except in the coastal area where Greeks had established themselves. These two groups have remained the basic elements in the population. Minor elements which settled there at various times and are there today include the Albanians, who filtered into Macedonia from the west; Kutzo-Vlachs, who speak a dialect of Rumanian and are principally a shepherd people; Turks, who formed the privileged class during the period of Ottoman rule and owned much of the land; gypsies; and Spanish-speaking Jews, concentrated in Salonika, whose forbears found refuge in the tolerant Ottoman Empire after their expulsion from Spain. Although the number of nationalities present in Macedonia has added to the complexities of the Macedonian "problem," the basic factors in it have been the antagonism between Slavs and Greeks and the dispute between Serbs and Bulgarians over the Macedonian Slavs. Until the rise of nationalism in the 19th century these conflicts did not arise in acute form. Then, however, Serbian, Bulgarian, and Greek nationalists

began to stake out conflicting claims to Turkish territory. The Macedonian Slavs, claimed as blood brothers by both Serbs and Bulgarians, numbered approximately 1,150,000, about one half the total population of Macedonia. In language they were neither Serbs nor Bulgarians but were closely related to both. By 1870, however, their linguistic and cultural ties were much closer with Bulgaria, which like Macedonia was still under Turkish administration, than with Serbia, which enjoyed political autonomy. In that year the Bulgarians secured the establishment at Constantinople of an autonomous Bulgarian Orthodox Church, or Exarchate, the jurisdiction of which extended to Macedonia. The treaty of San Stefano, which was forced on defeated Turkey by Russia in 1878, provided for the inclusion of Macedonia within the boundaries of an autonomous Bulgarian principality. The Treaty of Berlin in the same year revised that settlement and left Macedonia under direct Turkish rule with a promise of reforms which were to improve the lot of the population. Since that time Bulgaria has regarded Macedonia as lost national territory which must be regained. During the decades following the Treaty of Berlin the Turkish administration in Macedonia went from bad to worse, and the neighboring states (Bulgaria, Serbia, and Greece) engaged in bitter rivalry to win the allegiance of the Macedonian population by propaganda and by more violent methods. In 1893 the Internal Macedonian Revolutionary Organization (I.M.R.O.) was founded at Resan in Macedonia with a program of independence. Shortly afterward a Supreme Macedonian Committee was formed in Bulgaria with a program of liberating Macedonia from the Turks and annexing it to Bulgaria. These organizations hoped that the disorder they were helping to create in Macedonia would provoke Turkish reprisals against the population and thus would force the European powers to intervene. In 1902-03 a widespread insurrection broke out and was brutally crushed by the Turks. Thereupon Russia and Austria, the two great powers most directly interested, drew up a scheme of reforms (1903) which Turkey was forced to accept. It provided for the inspection and supervision of certain aspects of the administration by representatives of the European powers. This scheme never functioned efficiently, partly because the neighboring Balkan States, desirous of a more drastic solution of the problem, did not intend that it should. In 1912 they formed a military alliance and attacked Turkey with the aim of eliminating the Ottoman power from the soil of Europe. In this they were nearly successful; they defeated the Turkish armies, overran Macedonia, Albania, and a part of Thrace, but could not agree over the division of the Macedonian spoils. The Greeks, who had occupied Salonika, and the Serbs, who had taken over most of the remainder of Macedonia, joined to defeat the Bulgarians in the Second Balkan War in 1913 and divided the disputed territory between themselves, leaving only a small corner of it to Bulgaria. This settlement was confirmed by the Treaty of Bucharest (1913). (See BALKAN LEAGUE; BALKAN WARS.) Bulgaria's entry into the First World War in 1915 on the side of the Central Powers was in part motivated by the desire to acquire Macedonia. When the Serbian Army was driven to the Adriatic coast in that



same year, the Bulgarians occupied Serbia's share of Macedonia and held it until the victory of the Allies in 1918. The Salonika front was the scene of the great Allied breakthrough which knocked Bulgaria out of the war and made untenable Germany's entire position in the south-east. The territorial settlement of 1919 restored, with some slight modifications, that of 1913. Yugoslavia and Greece were confirmed in possession of all of Macedonia except the Petrich district which remained in Bulgaria. During the 1920's, as a result of exchanges of populations between Greece and Turkey and between Greece and Bulgaria, Greek Macedonia became over 90 per cent Greek in population. It presented a far less acute problem than Yugoslav Macedonia which contained over 650,000 Slav inhabitants whom Bulgaria claimed as Bulgarians but whom Yugoslavia officially designated as «South Serbians». Severe treatment of this population by the Yugoslav government, coupled with terroristic outrages and the violation of the frontier on the part of bands organized on Bulgarian soil, made normal relations between the two countries very difficult. In Macedonia itself there were partisans of Bulgaria, of Yugoslavia, and of the idea of an independent Macedonia which had persisted since the early days of revolutionary activity against the Turks. Some of the tension was removed from the Macedonian question after the Bulgarian government broke up the terroristic Macedonian organization in Bulgaria in 1934 and signed a treaty of friendship with Yugoslavia in 1937. However, Bulgaria did not hesitate to occupy Yugoslav Macedonia when Germany crushed the Yugoslav Army in 1941 and to treat it as liberated Bulgarian territory. At the same time Bulgaria occupied the eastern part of Greek Macedonia between the Struma and Mesta rivers and began to resettle Bulgarians there. Having made these territorial gains with German aid, Bulgaria was reluctant to give them up and remained loyal to its alliance with Germany long after German military fortunes began to decline, partly because it saw no chance at all to maintain the new «Greater Bulgaria» in the event of a United Nations victory.

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**MACEDONIAN, The.** See UNITED STATES  
AND MACEDONIAN, BATTLE OF.

**MACEDONIANS**, followers of Macedonius, author of the Macedonia heresy; also called Pneumatomachi, or «Adversaries of the Spirit». The Macedonians came into existence toward the decline of the Arian controversy, when Macedonius became patriarch of Constantinople (341), and taught that the Holy Ghost was «subordinate to the Father and to the Son, unlike to them in substance, and a creature.» He was a semi-Arian; was deposed by the Arians in 360; and his special tenets condemned at the Council of Constantinople in 381. In that council the clauses defining the nature of the Holy Ghost were added to the Nicene Creed.

**MACEIÓ**, mǎ-sǎ-yō', Brazil, formerly MACAYO, city and capital of the state of Alagoas, on the Atlantic Coast, 135 miles southwest of Pernambuco. The city has a cathedral, lyceum,

government and other buildings. It has manufactures of machinery and cotton goods, and considerable ship-building is carried on here. Cotton, sugar and rum are the chief items of export. Maceió is the seat of a United States consular agent. Pop. 129,000.

**McENTEE**, Jervis, American painter: b. Rondout, N Y, 14 July 1828; d. there 27 Jan. 1891. He made his first contribution to the American Academy of Design in 1853, was elected associate of that institution in 1860 and academician in 1861. He belonged to the «Hudson River School» of artists and his favorite subject was the autumn type of landscape, although his work is by no means confined to one phase or season. Among his paintings are *The Melancholy Days Have Come* (1860); *Sea From Shore* (1873); *Old Mill in Winter* (1874); *Clouds* (1879); *Glimpse of Hunter Mountain* (1886); *A Cliff in the Catskills* (1888). His *Autumn Landscape* hangs in the Metropolitan Museum, New York.

**MACEO**, mǎ-sǎ'ō, Antonio, Cuban patriot: b. Santiago de Cuba, 14 July 1848; d. near Mariel, 2 Dec. 1896. He joined the insurgent army as a private in 1868, and his natural military ability and personal magnetism as a leader soon brought him to the front, making him second only to Gomez. Under his skillful leadership Martinez Campos was defeated at Demajayabo and at La Galleta; his campaign in Baracoa in 1878 evidenced masterly generalship, as did also his utter rout of Santacledes at San Ulpiano. Maceo alone of all the Cuban generals refused to sign the Peace of Zanjón and made a tour of the United States and other countries in America seeking support for the cause of Cuban independence. He was the first of the Cuban leaders to land in 1895, and his achievements in the campaign are among the most brilliant feats in the history of Cuba's long struggle for independence. While crossing the trocha between Majana and Mariel, attended only by his staff, he was surrounded by a Spanish force and killed.

**MACEO**, José, hō-sǎ, Rafael, Cuban patriot: b. Santiago de Cuba, 1846; d. La Loma del Gato, Cuba, 5 July 1896. He was a brother of Antonio Maceo (q.v.) and took a conspicuous part in the Rebellion of 1868-78. He remained in Santiago de Cuba after the Peace of Zanjón, which he with his brother refused to sign. He lived in Costa Rica from 1885 until the outbreak of the rebellion in Cuba in 1895, when he raised a large force which he commanded with signal success. He was killed in a furious engagement at La Loma del Gato in which the Cubans were finally victorious. For an adequate account of the importance of the Maceo brothers consult General Weyler's *Mi Mando en Cuba, 10 Febrero 1896 a 31 Octubre 1897* (5 vols., Madrid 1910-11).

**MACERATA**, mǎ-chǎ-rǎ'tǎ, central Italy, (1) an episcopal city, capital of the province of the same name, picturesquely situated on an eminence, 1,207 feet high, between the Apennines and the sea, 21 miles south of Ancona. It is encircled by walls, pierced by six gates, has a cathedral, provincial palace and theatre on the central public square, town-hall (13th century), a college founded in 1290, museum, etc. Terra cotta, chemicals and matches are among its manufactures. Pop. of commune

26,000. (2) The province has an area of 1,032 square miles.

**MacEWEN, Walter**, American artist: b. Chicago, 1858; d. New York, 20 March 1943. He studied under Cormon and Tony Robert-Fleury in Paris, and lived much abroad. His work includes landscapes, portraits, decorative panels and figure subjects and is marked by excellent sense of line and strong feeling for color. He executed panels for the Liberal Arts Building at the Columbian Exposition, Chicago, and for the Congressional Library, Washington. He has been awarded numerous prizes, including gold medals at Berlin, Vienna and Munich, the Lippincott prize at Philadelphia and the Harris prize at Chicago. He is an officer of the Legion of Honor and of the Belgian Order of Leopold. He served on the International Jury of Awards at the Panama Exposition in 1915. Many of his paintings have been acquired by public galleries. Among them are 'Sunday in Holland' (Luxembourg); 'An Ancestor' (Cormoran Gallery, Washington); 'Judgment of Paris' (Art Institute, Chicago).

**McFARLAND, mak'far'länd, John Horace**, American master printer and civic improvement expert: b. McAlisterville, Juniata County Pa., 24 Sept. 1859. He was privately educated, learned the printing business and in 1878 established his own business, which after several changes was incorporated as the J. Horace McFarland Company in 1891. In 1890-93 he printed and was a contributor to *American Gardening*, and in 1901-04 he printed *Country Life in America*, also contributing articles and photographs. He edited the 'Beautiful America' department in *The Ladies' Home Journal* in 1904-07. He is an active member of various leagues for improving and beautifying American cities and villages, is an ardent advocate of national parks and forest conservation and organized a campaign for the preservation of Niagara Falls. He edited the *American Rose Annual* in 1916-18; furnished photographic illustrations for Mabel Osgood Wright's 'Flowers and Ferns in their Haunts,' and assisted in illustrating and printing Bailey's 'Standard Cyclopedia of Horticulture.' Contributor to numerous periodicals; author of 'Photographing Flowers and Trees' (1902); 'Laying Out the Home Grounds' (1915); 'My Growing Garden' (1915); 'The Rose in America' (1923).

**McFARLAND, John Thomas**, American Methodist clergyman: b. Mount Vernon, Ind., 2 Jan. 1851; d. 22 Dec. 1913. He was educated at the Iowa Wesleyan University, Simpson College, Iowa, and at Boston University, and was ordained in the Methodist ministry in 1873. He filled pastorates at Millersburg and Sweetland Centre, Iowa; Portsmouth, R. I.; Elmwood and Peoria, Ill.; was president of the Iowa Wesleyan University in 1884-91; pastor of Grace Church, Jacksonville, Ill., of New York Avenue Church, Brooklyn, and First Church, Topeka, Kan. He was editor of the Sunday School literature of the Methodist Church from 1904 until his death. Author of 'Preservation vs. The Rescue of the Child'; 'The Book and the Child'; 'Etchings of the Master.'

**MACFARLANE, Alexander**, American mathematician: b. Blairgowrie, Scotland, 21 April 1851; d. 28 Aug. 1913. He was graduated at Edinburgh University in 1875, taking

his DSc. in 1878, and in 1881 was appointed examiner in mathematics there. He became professor of physics at the University of Texas in 1885 and from 1897 was lecturer on mathematics at Lehigh University. He was a Fellow of the Royal Society of Edinburgh and a member of the Washington Academy of Sciences. Author of 'Algebra of Logic' (1879), 'Physical Arithmetic' (1885); 'Papers on Space Analysis' (1894); 'Bibliography of Quaternions and Allied Mathematics' (1904), etc.

**MacFARREN, Sir George Alexander**, English composer: b. London, England, 2 March 1813; d. there, 31 Oct. 1887. He was educated at the Royal Academy of Music, where in 1837 he became a professor of harmony and composition and in 1875 principal. In the same year he was elected professor of music in Cambridge University. Among his compositions are the operas 'The Devil's Opera' (1838); 'Robin Hood' (1860), and the oratorios 'St. John the Baptist' (1873); 'King David' (1883), etc. He also wrote several valuable treatises: 'Harmony' (1860); 'Counterpoint' (1879), etc. He was knighted in 1883. In 1860 he became blind and his wife thereafter wrote his compositions from his dictation.

**McFAUL, James Augustine**, American Roman Catholic prelate: b. Larne, County Antrim, Ireland, 6 June 1850; d. 16 June 1917. At an early age he attended Saint Vincent's College, Beatty, Pa., finishing his classical studies at Saint Francis Xavier's College, New York City, and subsequently pursuing his theological course at Seton Hall, South Orange, N. J. He was ordained priest 26 May 1877, (Orange, Paterson, Jersey City, Newark and New Brunswick, N. J., being in turn the scene of his first labors in the ministry. In 1878 he was named assistant at Saint Mary's Church, Trenton, N. J., and afterward pastor of the church of Our Lady Star of the Sea, Long Branch, N. J. Some years later he assumed the rectorship of the Cathedral at Trenton, and then became secretary, chancellor and vicar-general of the diocese. On the death of Bishop O'Farrell in 1894 Father McFaul was chosen his successor, and was consecrated at Trenton 18 October of that year. Noteworthy among his achievements were the erection of an orphan asylum at Hopewell and of a home for the aged at Laurenceville, N. J., also a day nursery in Trenton. He is the author of some excellent articles on 'American Citizenship,' published a volume of pastoral letters, etc., and was a leading power in forming the Saint Michael's Diocesan Union. However, he is perhaps best known as the founder of the Federation of Catholic Societies and the reorganizer of the Ancient Order of Hibernians, American branch.

**MacFLECKNOE, or A SATIRE UPON THE TRUE-BLEW PROTESTANT POET, T. S.**, a satire by John Dryden (q.v.), published in 1682, in which Thomas Shadwell has the principal part. Dryden here introduced the name of Richard Flecknoe (1600-1678?), who by the author is represented as an Irish priest famed for his bad verse, but who is described by Andrew Marvell as "an English priest at Rome." Flecknoe was disliked by Dryden because of the former's abuse of the players and his attacks on their morality or rather absence of it. The name served also as a

stalking-horse from behind which Shadwell might be pilloried as the adopted son and heir of Flecknoe. The satire served Pope as model for his 'Dunciad'. The authorship of 'MacFlecknoe' long disputed and attributed to Dryden, was called in question in 1918 when there appeared a possibility that it might have been written by John Oldham, Dryden's friend. A manuscript of the latter's poems in the Bodleian Library contains 'MacFlecknoe,' but Dryden claimed authorship of the piece and his friend Oldham never did. Consult Belden, H. M., 'The Authorship of MacFlecknoe' (in *Modern Language Notes*, December 1918).

**McFLIMSEY**, mäk flīm'zi, *Flora*, the heroine of the once famous poem 'Nothing to Wear,' by William Allen Butler (q.v.). It was published in 1857 and became immediately popular.

**MacGAHAN**, mäk-gá'hán, *Januarius Aloysius*, American journalist and war correspondent: b. near New Lexington, Ohio, 12 June 1844; d. Constantinople, 9 June 1878. He followed different callings in Western States, then went to Europe and studied law in Brussels. Upon the outbreak of the Franco-German War in 1870 he went to the field as correspondent of the *New York Herald*, and was with Bourbaki's army. He visited Bordeaux and Lyons and his interviews with clerical, monarchical and republican leaders attracted wide attention. He was the only newspaper correspondent in Paris during the whole period of the Commune and narrowly escaped death. In 1873, after heroic exertions, with extreme hardships, he reached the Russian army before Khiva, and sent to the *Herald* reports of the campaign which won for him high admiration both here and in Europe, his account of the capitulation of the city being regarded as "a masterpiece of military journalism." Returning to America, he went to Cuba to report on the *Virginius* affair, then to Spain, upon the Carlist uprising, where he spent 10 months with the army of Don Carlos, was captured by the Republicans, mistaken for a Carlist, condemned to death and saved by the intervention of the United States Minister. He then went to England, and in 1875 accompanied the Arctic expedition on the *Pandora*. In 1876 he joined the Turkish army, in the service of the London *Daily News*, and did memorable work in his description of the Bulgarian atrocities, his accounts standing approved before the world in face of all attempts to discredit them. In behalf of Bulgaria he appealed to Russia, was at the front in the Russo-Turkish War that followed, and was hailed as a chief instrument of Bulgaria's resulting independence. While nursing a friend he contracted a fever which in a few days caused his death. In 1884 the Ohio legislature secured the removal of his body from its foreign grave to its final resting-place at New Lexington. He wrote 'Campaigning on the Oxus, and the Fall of Khiva' (1874); 'Under the Northern Lights' (1876), and 'Turkish Atrocities in Bulgaria' (1876).

**McGEE**, ma-gé', *Anita Newcomb*, American physician: b. Washington, D. C., 4 Dec. 1864. She is a daughter of Simon Newcomb (q.v.); was educated at Newnham College, Cambridge, England, at the University of Geneva and at other institutions in Europe; also graduated in medicine at Columbian (now George Washington) University, 1892, and took

a post-graduate course in gynecology at the Johns Hopkins Hospital. From 1892 to 1896 she practised in Washington. In 1888 she married W. J. McGee (q.v.). She has held prominent positions in the National Society of the Daughters of the American Revolution, and from April to September 1898 was director of its hospital corps, which selected women nurses for army and navy. In August 1898 to December 1899 she was acting assistant surgeon in the United States army, being the first woman to hold such a position, and was assigned to duty in the surgeon-general's office, where she organized the army nurse corps. When the Congress approved this work by making the nurse corps of trained women a permanent part of the army the pioneer stage was passed, and she resigned 31 Dec. 1900. In 1904, acting as president of the Society of Spanish-American War Nurses and as representative of Philadelphia Red Cross Society and by agreement with Japanese government, took a party of trained nurses formerly in United States army to serve in the Japanese army for six months gratuitously. Was appointed by the Japanese Minister of War as supervisor of nurses, which placed her in the same rank with officers of the Japanese army, and inspected and reported on relative nursing conditions. She is a recipient of the Japanese Imperial Order of the Sacred Crown and of a special Japanese Red Cross decoration and two Russo-Japanese War medals. She is a member of the Association of Military Surgeons of the United States and of the Spanish War Veterans, being the only woman eligible. She lectured on hygiene at the University of California in 1911, and has lectured throughout the United States and written for various magazines.

**McGEE**, Thomas D'Arcy, Canadian journalist and politician: b. Carlingford, Ireland, 13 April 1825; d. Ottawa, Ontario, 7 April 1868. In 1842 he emigrated to the United States. In 1845 he returned to Ireland, but complicity in the Young Ireland movement and an abortive attempt to raise rebellion among the Glasgow Irish caused him to seek refuge in the United States in 1848. McGee then edited the *New York Nation* for two years, became converted to constitutional methods for the redress of Irish grievances and went to Canada in 1857 where he was editor of the *The New Era*. He entered Parliament in 1857; was president of the Council 1864-67 and Minister of Agriculture on the carrying through of confederation, which his eloquence and persuasiveness had done much to popularize. His assassination was the result of his opposition to the Fenian movement. He published 'History of Ireland' (1862); 'Speeches and Addresses of the British-American Union' (1865), etc.

**McGEE**, W. J., American scientist: b. in Dubuque County, Iowa, 17 April 1853; d. Washington, D. C., 4 Sept. 1912. He was self-educated, and from 1873 to 1875 surveyed land and practised in the courts. He also improved several agricultural implements, some of which he patented. In 1877-81 he made geologic and topographic surveys of northeastern Iowa, and for the United States Geological Survey he surveyed and mapped 300,000 square miles in the southeastern part of the country, and performed many other important services in the depart-

ments of geology, ethnology and anthropology. From 1893 to 1903 he was ethnologist in charge of the Bureau of American Ethnology. He was president of the American Anthropological Association, chief of the Department of Anthropology and Ethnology of the Louisiana Purchase Exposition and associate editor of the *National Geographic Magazine*. He wrote 'Geology of Chesapeake Bay' (1888); 'Pleistocene History of Northeastern Iowa' (1891); 'The Lafayette Formation' (1892); 'Potable Waters of the Eastern United States' (1894); 'The Siouan Indians' (1897); 'Primitive Trephining in Peru' (1898); 'The Seri Indians' (1899); 'Primitive Numbers' (1901); 'Soil Erosion' (1911); 'Wells and Subsoil Water' (1913), and many scientific memoirs.

**McGIFFERT, Arthur Cushman**, American theologian: b. Sauquoit, N. Y., 4 March 1861; d. 25 Feb. 1933. He was graduated at the Western Reserve College in 1882, and at Union Theological Seminary in 1885, and continued his studies at the universities of Berlin and Marburg, Germany, and in France and Italy. In 1888-90 he was instructor in Church history at Lane Theological Seminary, Cincinnati, and professor there 1890-93, in 1893-1926 he was professor of Church history and in 1917-26 president of Union Theological Seminary, New York. In 1897 he published 'A History of Christianity in the Apostolic Age,' and because of criticism and threatened denominational disturbance, involving his possible trial for heresy, to which this book gave rise, he withdrew from the Presbyterian ministry, and later, while still retaining his professorship, joined the Congregational Church. His other publications include 'Dialogue Between a Christian and a Jew,' doctor's thesis (1888), and a translation of Eusebius' 'Church History,' with prolegomena and notes (1890); 'The Apostles Creed' (1902); 'Protestant Thought Before Kant' (1911); 'Martin Luther, the Man and his Work' (1911); 'The Rise of Modern Religious Ideas'; 'The God of the Early Christians' (1924).

**McGIFFIN, ma-gif'in, Philo Norton**, American naval officer: b. Washington County, Pa., 1863; d. New York, 11 Feb. 1897. He was graduated in 1882 at the United States Naval Academy and was stationed in China, and at the outbreak of the war between China and France was permitted to resign from the United States navy to enter the service of China. He established a naval academy at Wei-hai-wei, of which he had charge. When the China-Japan War broke out he was placed in command of the *Chen Yuen*, and was the first American or European to command a modern warship in action. He was in command at the battle of Yalu River, in which action he was so severely injured that he afterward shot himself at a hospital in New York.

**McGILL, ma-gil', James**, Canadian philanthropist: b. Glasgow, Scotland, 6 Oct. 1744; d. Montreal, 19 Dec. 1813. He was educated in Glasgow and in 1770 removed to Canada, where he engaged in the northwest fur-trade, afterward becoming a merchant in Montreal. McGill was a member of the Parliament of Lower Canada and held the rank of brigadier-general in the War of 1812. He used much of his wealth in philanthropic work and at his death founded McGill College (q.v.) in Montreal.

**McGILL, John, R. C. bishop**: b. 1809; d. 1872. Admitted to the bar, he practiced law in Bardstown, Ky.; studied theology and was ordained priest 1835; in 1850 he was named bishop of Richmond, Va., and in November of that year was consecrated at Bardstown by Dr. Kenrick.

**McGILL COLLEGE AND UNIVERSITY**, in Montreal, Canada, was founded in 1811 by James McGill (q.v.). By will he left an estate known as the "Burnside Estate," which contained 47 acres of land and a fine manor house, near Montreal, and £10,000 to the "Royal Institution for the Advancement of Learning," for the establishment of a university in Lower Canada (province of Quebec). The bequest was valued at the time as worth about \$120,000. It was stipulated that one of the colleges of the university should be known in perpetuity as McGill College. McGill University includes a group of schools or colleges and is affiliated with Cambridge, Oxford and Dublin universities. Many generous benefactors have supplied means for the foundation of various departments or faculties. The late Lord Strathcona and Mount Royal erected and endowed the Royal Victoria College for Women. This is a residential college, and is only one of many gifts from the same donor, the last of which was a donation of \$620,000 for the erection of a medical building. Sir William Macdonald erected, equipped and endowed the Macdonald Chemistry and Mining Building, the Macdonald Physics Building and the Macdonald Engineering Building. He also gave \$200,000 endowment to the Law School, besides other large donations. He has been the chief benefactor of the university. Peter Redpath gave the University Library and the Peter Redpath Museum. The degrees conferred by the university are B.A. and B.Sc., in the Faculty of Arts, and to both men and women; B.C.L. and D.C.L. in the Faculty of Law; B. Arch. and B.Sc., in the Faculty of Applied Science; M.D., C.M. and D.D.S., in the Faculty of Medicine; B.S.A. in the Faculty of Agriculture; Mus. Bach. and Mus. Doc. in the Department of Music and M.A., M.Sc., D.Sc., and D.Litt. in the Graduate School. There are three affiliated theological colleges which adjoin the university grounds. The supreme authority rests with the Crown and is exercised by the governor-general of Canada. The governors, 25 in number, manage the finances, appoint professors, pass statutes for the general government of the university and attend to other important matters. The president of the board of governors is *ex officio*, the chancellor. The vice-chancellor is the principal, who is the head of the academic department and chief administrative officer. The Senate is the supreme academic authority of the university and has control over admission, courses of study, discipline and degrees. The enrolment in university courses for 1938-39 was 3,275, and in other departments of study 1,840. Annual income is well over \$2,000,000. Plant value is estimated at some \$14,500,000.

**MacGILLICUDDY'S (ma-gil'-i-küd'y) REEKS**, Ireland, a picturesque mountain range, in County Kerry, extending for 13½ miles from the lakes of Killarney on the east to Lough Carra on the west, and covering an area of 28 square miles. It is the loftiest moun-

tain range in Ireland, culminating in Carran-tuohill, 3,414 feet high.

**MCGILLIVRAY**, ma-gíl'i-vrā, **Alexander**, chief of the Creek Indians: b in Alabama about 1740; d. Pensacola, Fla., 17 Feb. 1793. His father was a Scottish merchant of good family and his mother a half-breed. He received a good education at Charleston, S. C.; was placed in a mercantile establishment in Savannah; but soon returned to the Creek country, where he became partner in a large trading house and rose to a high position among the Indians. After the death of his mother, a member of the ruling stock, he became chief of the Creeks, having received a call from a formal council, and styled himself Emperor of the Creek Nation. During the Revolution the McGillivrays, father and son, were zealous adherents of the royal cause, the former holding the rank of a colonel in the British service. After the war Alexander McGillivray, in behalf of the Creek confederacy, entered into an alliance with Spain, of which government he was made a commissary, with the rank and pay of colonel. In 1790 he was induced by President Washington to visit New York, where he eventually signed a treaty yielding certain disputed lands lying on the Oconee. He was also persuaded to withdraw from Spanish service and was rewarded with an appointment as agent for the United States, with the rank and pay of brigadier-general.

**MCGILVARY**, Evander Bradley, American linguist and philosopher: b Bangkok, Siam, 19 July 1864, of American parents. He was graduated from Davidson College in 1884 and from Princeton in 1888. He was appointed as instructor in the classics at Bingham School in 1884, and in 1889-90 studied at Princeton Theological Seminary. From 1891 to 1894 he was translator for the Presbyterian Board of Foreign Missions in Siam, and in 1894 began graduate work at the University of California, where he later became assistant professor. In 1899 he was appointed Sage professor of ethics at Cornell. In 1905 he was appointed professor of philosophy at the University of Wisconsin. In 1910-11 he was president of the Western Philosophical Association and in 1912-13 of the American Philosophical Association. He has translated the Gospels of Matthew, Luke and John, and the Acts of the Apostles into the Lao dialect of Siamese. Has contributed to various philosophical journals and to encyclopædias.

**MCGLYNN**, ma-glīn', **Edward**, American Roman Catholic clergyman: b. New York, 27 Sept. 1837; d. Newburg, N. Y., 7 Jan. 1900. He was educated at the College of the Propaganda in Rome, and from 1866 was pastor of Saint Stephen's Church in New York. He favored the education of children by the State rather than in parochial schools and in 1886 warmly supported the candidacy of Henry George for the mayoralty, thereby bringing upon himself the censure of the Church. He was summoned to Rome to exculpate himself, but refused to go, pleading his ill-health. Persisting in his refusal he was excommunicated in 1887. He was one of the founders of the Anti-Poverty Society and was its president. In 1893, after a hearing before the Pope's delegate, Monsignor Satolli, the ban of excommunication was re-

moved, after signing a document drawn up by the apostolic delegate to the effect that his economic views were not in conflict with the Catholic faith. He was in charge of Saint Mary's parish in Newburg at his death.

**McGOVERN**, ma-gōv'ern, **John**, American author: b. Troy, N. Y., 18 Feb. 1850; d. 17 Dec. 1917. He was connected for 16 years with the *Chicago Tribune*, and after 1880 was engaged in literary work and lecturing chiefly on great writers and historical characters. In the action of S. E. Gross, author of the play 'The Merchant Prince of Cornville,' against Edmond Rostrand, author of 'Cyrano de Bergerac,' he acted as literary expert for the former, furnishing in the case over 700 exhibits containing innumerable parallels between the two dramas. The United States Court at Chicago issued a decree in 1902 sustaining the claim of Gross to priority of authorship and forbidding the representation of 'Cyrano de Bergerac' in this country. McGovern's numerous writings include 'The Empire of Information' (1880); 'A Pastoral Poem' (1882); 'The Toller's Diadem' (1885); 'Under the Open Sky' (1890); 'King Darwin,' a novel (1894); 'American Statesmen' (1898); 'Famous Women of the World' (1898); 'John McGovern's Poems' (1902); 'The Golden Legacy'; 'History of Grain' (1913); 'Trees' psychologically considered; 'Hospitality'; 'In Bohemia,' etc.

**MACGRATH**, mā-grāth', **Harold**, American journalist and novelist: b. Syracuse, N. Y., 4 Sept. 1871. He was educated in Syracuse and was engaged in journalism from 1890. He wrote 'Arms and the Woman' (1899); 'The Puppet Crown' (1901); 'The Grey Cloak' (1903); 'The Princess Elopes' (1905); 'Enchantment' (1905); 'Hearts and Masks' (1905); 'Half a Rogue' (1906); 'The Watteau Shepherdess,' an operetta (1906); 'The Best Man' (1907); 'The Enchanted Hat' (1908); 'The Lure of the Mask' (1908); 'The Goose Girl' (1909); 'A Splendid Hazard' (1910); 'The Carpet from Bagdad' (1911); 'Deuces Wild' (1913); 'Pidgin Island' (1914); 'Voice in the Fog' (1915); 'The Drums of Jeopardy' (1920); 'The Ragged Edge' (1922); 'The World Outside' (1923); 'The Sporting Spinster' (1925); 'The Green Complex.' He died 29 Oct. 1932.

**MCGRATH**, Patrick Thomas, British-American journalist: b. Saint John's, Newfoundland, 16 Dec. 1868; d. 1929. Was educated at the Christian Brothers' School, Saint John's, and in 1889 became a reporter on the Saint John's *Evening Herald*. He was promoted acting editor in 1893, and in 1894-1907 was editor. He established the *Evening Chronicle*, which in 1912 was united with the *Herald*, and became president of the company. He acted as Newfoundland correspondent of the London *Times* after 1904 and was an extensive contributor to both British and American periodicals. He was president of the Legislative Council of Newfoundland after 1915. He assisted in the preparation of the colony case concerning the French and American fisheries and was the colony's secretary on the occasion of the Dominion's Royal Commission visit to Newfoundland in 1914. He was honorary secretary of the Newfoundland Patriotic Fund, the Newfoundland Regiment Finance Committee and the Newfoundland War Pensions



Board after 1914; and chairman of the High-Cost-of-Living Commission after 1917. Author of 'From Ocean to Ocean' (1911); 'Newfoundland in 1911'.

**McGREADY**, ma-grā'dī, James, American Presbyterian clergyman: b. in Pennsylvania about 1760; d. 1817. He studied for the ministry in the school of John McMillan, of Cannonsburg, Pa., and in 1788 was licensed to preach. After some years of work in North Carolina, in 1796 he removed to southwestern Kentucky, and under his direction began the great revival of religion which culminated in 1800 and became memorable in the religious history of the country. He organized and conducted the first camp-meeting, and employed as preachers unordained young men without special theological training, thereby provoking dissension in the Presbyterian Church. Out of this disagreement arose the Cumberland Presbyterian Church (see PRESBYTERIAN CHURCH), organized in 1810. McGready, however, afterward became reconciled to the older Church and resumed his fellowship in it. Two volumes of his sermons were published years after his death, the first at Louisville, Ky., in 1831, the second at Nashville, Tenn., in 1833. Consult Davidson, 'History of the Presbyterian Church in the State of Kentucky' (New York 1847); Edson, 'Early Presbyterianism in Indiana' (1898); Foote, 'Sketches of North Carolina, Historical and Biographical' (New York 1850; 2d series, 1855); Smith, 'History of the Cumberland Presbyterian Church'.

**MacGREGOR**, māk-grēg'er, John ("Rob Roy"), Scottish traveler, writer and philanthropist: b. Gravesend, 24 Jan. 1825; d. Boscombe, 16 July 1892. He studied at Trinity College, Dublin, and was graduated from Trinity College, Cambridge, in 1847. He was called to the bar in 1851, but after a brief period in which he devoted himself to the law of patents he abandoned the profession and spent his time in travel and in works of philanthropy. He traveled in Europe, Egypt, Palestine, Russia, Algeria and America. He was deeply interested in the history and theory of marine propulsion and was largely instrumental in the introduction of canoeing into British sports. He constructed a canoe which he christened *Rob Roy*, and in which he made extended journeys. His books giving accounts of these expeditions were widely and deservedly popular. He was possessed of ample resources and gave liberally to philanthropic purposes. He sketched cleverly and illustrated his own books, and in early days occasionally contributed sketches to *Punch*. Besides numerous magazine articles he was author of 'Three Days in the East' (1850); 'Our Brothers and Cousins, A Tour in Canada' (1859); 'A Thousand Miles in the Rob Roy Canoe' (1866); 'The Rob Roy on the Baltic' (1867); 'The Rob Roy on the Jordan, Red Sea and Gennesareth' (1869), etc.

**McGUFFEY**, māk-gūffē, William Holmes, American educator: b. Washington County, Pa., 23 Sept. 1800; d. Charlottesville, Va., 4 May 1873. He was graduated at Washington College, Pa., in 1826, was appointed professor of ancient languages at Miami University in that year, and in 1832 became professor of moral philosophy there. He was appointed president of Cincinnati College in 1836 and of

Ohio University in 1839. He was professor of moral philosophy at Woodward College, Cincinnati, in 1843-45, and thereafter until his death he was professor of moral philosophy and political economy at the University of Virginia. He prepared the series of school reading- and spelling-books known under his name and for many years widely popular in the schools of the United States.

**McGUIRE**, mā-gwir', Hunter Holmes, American surgeon: b. Winchester, Pa., 11 Oct. 1835; d. near Richmond, Va., 19 Sept. 1900. He was graduated from the Winchester Medical College in 1855, and from the Medical College of Virginia in 1858, studying also in the medical schools of New Orleans and Philadelphia. He was professor of anatomy at the Winchester Medical College in 1856-58 and afterward practiced in Philadelphia. He enlisted in the Confederate army at the outbreak of the Civil War, became medical director of the Army of the Shenandoah Valley and later of the Second Army Corps. He was in attendance upon General "Stonewall" Jackson at the time of his death in 1863. In 1865-78 he was professor of surgery at the Virginia Medical College, Richmond. He organized Saint Luke's Home for the Sick in Richmond, with a training school for nurses. He was president of the American Medical Association in 1893.

**MACH**, mah, Ernst, Austrian physicist and philosopher: b. Turas, Moravia, Austria, 18 Feb. 1838; d. 9 Feb. 1916. After a partly private secondary education he studied at the University of Vienna, taking his doctor's degree in physics in 1860. After spending several years as *privatdozent* he was appointed professor of mathematics at Graz and in 1867 was called to the chair of physics at the University of Prague. Here he published in 1883 his first important work, 'Die Mechanik in ihrer Entwicklung historisch-kritisch dargestellt,' which has run through seven German and several English editions. Having turned his attention to the relation of physiological and physical processes, he next produced his equally epoch-making 'Analyse der Empfindungen' (1886; 6th ed., 1911). Owing to his increased interest in epistemological and historical problems, Mach gladly accepted in 1895 the offer of a philosophical chair at Vienna, where he read on the history and theory of the inductive sciences. The following year appeared his 'Prinzipien der Wärmelehre,' while his university lectures ultimately took the shape of a substantial volume in 1905 under the caption 'Erkenntnis und Irrtum.' A paralytic stroke suffered in 1898 reduced the remainder of his life to a cripple's martyrdom, though it did not interfere with his mental activity. In spite of his liberal position in politics he was honored with the title of a court chancellor and was made a member of the upper chamber of the Austrian Parliament.

Mach's aim was to liberate science from metaphysical conceptions and thus he became in a sense a precursor of pragmatism. His general trend of thought exerted a profound influence on men like William James, Jacques Loeb, Karl Pearson and Wilhelm Ostwald, and his attempt to substitute the mathematical notion of function in place of the time-honored concept of causality has recently found an ad-



vocate in Bertrand Russell. His definition of science as an economical description rather than an explanation of the universe aroused considerable discussion in philosophical circles. Sympathetic insight, impartiality, a singularly sane judgment and an almost complete freedom from preconceptions render Mach an ideal historian of science and one of the trustworthiest leaders of advanced thought. His principal works are accessible in English translations. For a brief exposition of his philosophy with biographical notes consult Carus, Paul, 'Professor Mach and his Work' (in *The Monist*, January 1911, pp. 18-42).

ROBERT H. LOWIE,

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**MÁCHA**, má'ka, Charles Ignace, Czech poet b Prague, 10 Nov 1810; d. Leitmeritz, 5 Oct. 1836. His style of poetry is full of sentiment and reflection, a forerunner of the present Czech school of poetry, strongly influenced by Byronic "Weltschmerz," i.e., the spirit bred by the realization of disharmony between ideals and concrete facts of reality. He studied in Vienna and Prague. Extreme poverty caused pulmonary trouble, from which he died after a lingering illness. His chief work, 'Maj' (Prague 1836), is a lyrical epic. His historic tales, such as 'The Gypsies,' etc., are in the style of Walter Scott. His collected works were published in Prague (1862).

**MACHÆRODUS**, mā-kē'rō-dūs, a genus of huge extinct cats, fossil in the Miocene and subsequent formations, and including the largest of the *Nimravida*. See SABRE-TOOTHED TIGER.

**MACHÆRODONTINÆ**, mā-kē'rō-dōn-tī'nī, an extinct subfamily of *Felida*, including the sabre-toothed cats and their allies. This group became separated from the typical cats (*Felina*) in the Oligocene epoch, and remained a numerous and powerful element of the carnivora of the world until the close of the Pleistocene. The general form and structure were catlike, and produced an equally effective armament, except, perhaps, in speed, for the limbs were shorter and heavier as a rule than in the feline cats of similar size, and the hind foot had five toes, instead of four. Another difference was in the comparative shortness of the tail. Mainly, however, the specialization of this subfamily was in the dentition, which differed from that of the cats in many particulars, and especially in the extraordinary development of the upper canines into huge stabbing-tusks, especially striking in *Smilodon*, one of the most modern and widely distributed American genera. Other genera are *Hoplophoneus*, a primitive genus of the White River beds, with species of small size; *Machærodus*, *Eusmilus* and *Dinictis* were other White River genera of importance, while later forms illustrate the genera *Archæolurus* and *Nimravus*.

**MACHAR**, mā-kār, Agnes Maule (FRIDELIS), Canadian author. b Kingston, Ontario, about 1856. She was educated at Kingston and at an early age her contributions began appearing in the magazines of Canada, England and the United States. She was author of a volume of verse, 'Lays of the True North'; two historical works, 'Memorials of Rev. Dr Machar'—the author's father; 'The Story of Old Kingston' (1908); 'Stories of the British Em-

pire' (1913); and the novels, 'Katie Johnston's Cross'; 'Lost and Won'; 'Roland Graeme, Knight' (1892); 'The Heir of Fairmount Grange,' etc. D. 24 Jan. 1927.

**McHENRY**, māk-hēn'ri, James, American military surgeon and politician: b. Ballymena, County Antrim, Ireland, 1753; d. 1816. He had studied at Dublin, when, about 1771, he came to America, and in Philadelphia soon entered upon the study of medicine under Dr Benjamin Rush (qv). On the outbreak of the Revolution he became surgeon of the 5th Pennsylvania battalion; in November 1776 was taken prisoner at Fort Mifflin; was paroled in the following January, and in March 1778 exchanged. In May of that year he was made assistant private secretary to Washington, and held that position until October 1780, when as major he was appointed to a place on the staff of Lafayette. Elected in 1781 to the Maryland senate, he continued a member of that body until 1786, being also during the second half of that period a delegate to the Confederation Congress. In 1787 he was made a member of the Constitutional Convention, in 1789 was elected to the general assembly of Maryland, and sat in the senate of that State, 1791-96, when he was appointed by Washington Secretary of War, retaining that position in the cabinet under John Adams' administration until 1800. As an ardent Federalist he used his influence in favor of a strong national defense, and was a zealous partisan of Alexander Hamilton. His partisanship in favor of Hamilton led to a request for his resignation from President Adams. After resigning from Adams' Cabinet he spent the rest of his life in Maryland. Fort McHenry (qv) was named after him.

**McHENRY**, James, American physician and author: b. Larne, County Antrim, Ireland, 20 Dec. 1785; d. there, 21 July 1845. He was educated in Dublin and Glasgow, practised his profession for a time in Ireland and in 1817 emigrated to the United States and finally settled in Philadelphia, where he practised medicine and was engaged in mercantile business. In 1842 he was appointed United States consul at Londonderry and held that post until his death. Among his works are 'The Usurper; an Historical Tragedy' (played in Philadelphia 1820); 'The Wilderness, or Braddock's Times: A Tale of the West' (2 vols, 1823); 'Jackson's Wreath' (1829); 'O'Halloran, or the Insurgent' (1824); 'The Betrothed of Wyoming' (2d ed., 1830), etc.

**McHENRY, Fort.** See FORT McHENRY.

**MACHETE**, ma-chā'tā, a short sword-like tool, half knife, half cleaver, used in Cuba and other countries of tropical America for cutting cane and as a weapon in war. It was first brought into prominence during the Cuban revolution.

**MACHIAS**, ma-chi'as, Me., town and Washington County seat; alt. 80 feet; on the Machias River, near the sea; 89m. E. of Bangor; on the Maine Central Railroad. There are truck and poultry farms near by, and grist mills and granite quarries; lumber and shipbuilding are also local industries. A "long lumber" log drive takes place on the river each spring. A state normal school is in Machias, and at East Machias are Washington Academy (1823) and

the summer surveying school of the Massachusetts Institute of Technology. A trading post was established here in 1633 by Englishmen, but they were soon driven out by the French. The first permanent English settlement was made in 1763. In the Revolutionary War Machias participated prominently in the harassing of the British along the coast; in 1775 Machias seamen captured the British armed schooner *Margaretta* and, in reprisal, the town was partly burned by forces from the ship *Ranger*. In 1863, in observance of the town's centennial, an anniversary memorial was published. Pop. (1940) 1,954.

**MACHIAVELLI, Niccolo**, nē-kō-lō' mā-kē-a-vē'lē or māk-ī-a-vē'lī, Italian historian and statesman, possibly the greatest prose writer of the Italian Renaissance: b Florence, 3 May 1469; d there, 22 June 1527. Of Niccolo's early life and education we know nothing. No trace of him remains previous to his 26th year. But of his times and the scenes amid which he grew up, we know much. It was the calm but demoralizing era of Lorenzo the Magnificent. Machiavelli was a true child of his time. He too was thoroughly imbued with the spirit of the Renaissance; and looked back, fascinated, on the ideals of that ancient world that was being revived for the men of his day. But philosophy, letters and art were not the only heritage that the by-gone age had handed down; politics—the building of states and of empires—this also had engaged the minds of the men of that age, and it was this aspect of their activity that fired the imagination of the young Florentine. From his writings we know he was widely read in the Latin and Italian classics. But Virgil and Horace appealed to him less than Livy, and Dante the poet was less to him than Dante the politician; for he read his classics, not as others, to drink in their music or be led captive by their beauty, but to derive lessons in statecraft and penetrate into the secrets of the successful empire-builders of the past. It is equally certain, from a study of his works, that he had not mastered Greek. Like Ariosto, Machiavelli was indebted for his superb literary technique solely to the study of the literature of his own nation.

With the expulsion of the Medici from Florence, Machiavelli, at 30, emerged from obscurity to play a most important rôle in the Florentine politics of the succeeding decade and a half. In 1498 he was elected secretary to the Ten of War and Peace and from 1498 to 1512 was a zealous, patriotic and indefatigable servant of the republic. His energy was untiring, his activity ceaseless and many-sided. He conducted the voluminous diplomatic correspondence devolving upon his bureau, drew up memorials and plans in affairs of state for the use and guidance of the Ten, undertook the reorganization of the Florentine troops and went himself on a succession of embassies, ranging in importance from those to petty Italian states up to those to the court of France and of the emperor. He was by nature well adapted to the peculiar needs of the diplomacy of that day; and the training he received in that school must in turn have reacted on him to confirm his native bent and accentuate it until it became the distinguishing characteristic of the man. His first lessons in politics and statecraft were derived from Livy's history of the not over-

scrupulous Romans; and when he comes to take his lessons at first hand, it is in the midst of the intrigues of republican Florence, or at the court of a Caterina Sforza, or in the camp of a Cesare Borgia. Small wonder that his conception of politics should have omitted to take account of honesty and the moral law; and that he conceived "the idea of giving to politics an assured and scientific basis, treating them as having a proper and distinct value of their own, entirely apart from their moral value."

During this period of his political activity we have a large number of state papers and private letters from his pen; and two works of literary cast. These are his 'Decennale': historic narratives, cast into poetic form, of Italian events. The first treats of the decade beginning 1494; and the second, an unfinished fragment, of the decade beginning 1504. They are written in easy *terzine*, and are noteworthy as expressing the sentiment for a united Italy.

When in 1512 the Medici returned to Florence in the train of her invader, Machiavelli was dismissed from his office and banished for a year from the confines of the city. Later, on suspicion of being concerned in a plot against the Medici, he was thrown into prison and tortured. He was afterward included in a general pardon granted by Leo X. But Machiavelli did not return to public life until 1525; and this interval of enforced leisure from affairs of state was the period of his literary activity. A number of comedies, minor poems and short prose compositions did not rise above mediocrity. But in one dramatic effort he rose to the stature of genius. His 'Mandragola' achieved a flattering success, both at Rome and in Florence. It has been pronounced the finest comedy of the Italian stage; Macaulay rated it as inferior only to the greatest of Molière's. In its form, its spontaneity, vivacity and wit, it is not surpassed by Shakespeare; but it is a biting satire on religion and morality, with not even a hint of a moral to redeem it.

His lesser prose works are the 'Life of Castruccio Castracani,' and the 'Art of War,' a treatise anticipating much of our modern tactics. A more ambitious undertaking, and his largest work, is the 'History of Florence.' At the suggestion of the Cardinal de Medici, the directors of the studio of Florence commissioned Machiavelli to employ himself in writing a history of Florence, "from whatever period he might think fit to select, and either in the Latin or the Tuscan tongue, according to his taste." He was to receive 100 florins a year for two years to enable him to pursue the work. He chose his native tongue; and revised and polished his work until it became a model of style, and in its best passages justifies his claim to the title of the best and most finished of Italian prose writers.

But though Machiavelli had the historical style, he lacked historical perspective; he arranged his matter not according to objective value, but placed in the boldest relief those events that best lent support to his own theories of politics and statecraft. He makes his facts to be as he wishes them, rather than as he knows them to be. To Machiavelli history was largely to be written as a *Tendenzroman*,—manufactured to point a preconceived moral.

Though Machiavelli wrote history, poetry and comedy, it is not by these he is remembered. The works that have made his name a synonym, and given it a place in every tongue, were written almost in the first year of his retirement from political life. 'The Prince' and the 'Discourses on the First Ten Books of Titus Livius.' Each is a treatise on statecraft; together they form a complete and unified treatise, and represent an attempt to formulate inductively a science of politics. The 'Discourses' study republican institutions, 'The Prince' monarchical ones. The first is the more elementary and would come first in logical arrangement. But in the writing of them Machiavelli had in view more than the foundation of a science of politics. He was anxious to win the favor of the Medici; and as these were not so much interested in how republics are best built up, he completed 'The Prince' first, and sent it forth dedicated "to the magnificent Lorenzo, son of Piero de' Medici." In the 'Discourses,' the author essays "a new science of statesmanship, based on the experience of human events and history." In that day of worship of the ancient world, Machiavelli endeavors to draw men to a study of its politics as well as its art. In Livy he finds the field for this study.

In his commentary on the course of Romulus in the founding of Rome, we find the keynote of Machiavelli's system of political science. His one aim is the building of a state; his one thought, how best to accomplish his aim. Means are therefore to be selected, and to be judged, solely as regards their effectiveness to the business in hand. Ordinary means are of course to be preferred but extraordinary must be used when needed.

In 'The Prince,' a short treatise of 26 chapters, and making little more than a hundred octavo pages, Machiavelli gives more succinct and emphatic expression to the principles of his new political science. It is the best known of all his works. It is the one always connected with his name, and which has made his name famous. For the model of his prince, Machiavelli took Cesare Borgia and cites him as an example worthy of imitation; and he has shared in the execration that posterity has heaped upon Borgia. The strangest moral contradictions abound throughout 'The Prince,' as they do in all Machiavelli's writings. He is saint or devil according as you select your extracts from his writings.

Shakespeare, reflecting English thought, uses his name as the superlative for craft and murderous treachery. But later years have raised up defenders for him, and his rehabilitation is still going on. He has been lauded as "the noblest and purest of patriots," and more ardent admirers could "even praise his generosity, nobility, and exquisite delicacy of mind, and go so far as to declare him an incomparable model of public and private virtue."

His rehabilitation proceeds from two causes. Later research has shown that perhaps he only reflected his time; and his works breathe a passionate longing for that Italian unity which in our day has been realized. He may be worthy canonization as a national saint; but those who are more interested in the integrity of moral standards than in Italian unity will doubtless continue to refuse beatification to one who in-

deed knew the Roman *virtus*, but was insensible to the nature of virtue as understood by the followers of Christ. And no amount of research into the history of his age can make his principles less vicious in themselves. A better understanding of his day can only lessen the boldness of the relief in which he has heretofore stood out in history. He was probably no worse than many of his fellows. He only gave a scientific formulation to their practices. He dared openly to avow and justify the principles that their actions implied. They paid to virtue the court of hypocrisy, and like the Pharisee of the earlier time, preached righteousness and did evil; but Machiavelli was more daring, and when he served the devil, disdained to go about his business in the livery of heaven. (See PRINCE, THE). Among the editions of the collective works of Machiavelli may be mentioned those of Milan, 1810-11; Florence, 1813, Milan, 1821-22; Florence, 1826, 1843; and Florence (6 vols, 1873-77); Boston English translation (1891). The rendering of the 'Art of War' and 'The Prince' (in the 'Tudor Translations' Vols XXXIX and XL, London 1905), with Cust's introduction, is an admirable piece of work. Consult Dyer, 'Machiavelli and the Modern State' (Boston 1904); Morley, John, 'Machiavelli' (London 1898); Mourrisson, 'Machiavelli' (Paris 1883); Tommasini, 'La vita e gli scritti di Niccolò Machiavelli' (Turin 1882); Villari, 'Niccolò Machiavelli e i suoi tempi' (Florence 1877-82), and Burd's study (in the 'Cambridge Modern History' Vol. I, Cambridge 1902), with bibliography.

**MACHINE COMPOSITION.** See COMPOSING MACHINES.

**MACHINE DESIGN.** See DRAWING MECHANICAL AND MACHINE DESIGN.

**MACHINE ENGRAVING,** a mechanical process for engraving on wood, metal or stone. Since 1880 numerous machines have been invented to produce regular tints, geometrical and other designs and patterns, far more rapidly than by hand work. The most complex engraving is now executed wholly by machinery. Engraving by mechanical means is now generally employed in the making of banknotes, diplomas, stock certificates and other papers and documents, where special designs are required. Elaborate gearing systems have been introduced whereby the cutting tools execute a certain number of symmetrical motions and thus produce elaborate geometrical patterns. The first engraving machine was the invention of Wilson Lowry and was employed to engrave the plain background, skies, etc., of a plate. Most modern machines are so fitted that the cutting tool may be moved a certain definite distance after each cut so that the succeeding cut will be a line parallel to and at a regular distance from the last. The cutting tool is also fitted so that the depth and breadth of the cut may be easily regulated. The cutting edge is usually of highly-tempered steel for metal work, except in the case of copper, which is often coated with varnish, next scratched with the design and afterward etched by acid. For stone work, the cutting tool has a diamond-point and weights on the holder regulate the depth of the cut to be made.

**MACHINE FORGING.** The art of the blacksmith, working by hand at the forge and

anvil, has almost wholly disappeared, and the shaping of wrought iron and steel is now performed by machines. The exact duplication of parts of machinery began in the United States about 1854, and it became necessary to have forgings of uniform size so that they could be properly handled in special fixtures or holders while being machined to exact dimensions.

**Drop Forging.**—In the first attempt to obtain uniform forgings the smith hammered by hand the rough stock into a rude suggestion of the shape wanted so as to properly distribute the material and then placed it in an impression cut in a block of steel or cast to shape and forced it into the cavity by a series of blows from hand hammer and sledge.

The growing demand for firearms and other accurately made mechanisms developed the necessity for improvements in this line which kept pace with the requirements of the times, until the drop-hammer was produced. These hammers are named invariably by the weight of the hammer-head or ram and they range in sizes from 50 to 5,000 pounds.

Hammers are also constructed to operate by steam power of heavier types. They lift the ram or hammer head and drive it downward by steam power in a manner similar to the regulation steam-hammer. The regular belt-driven drop-hammer, as used in drop-forging, is operated usually by a treadle which the workman trips with his foot. This movement releases a clamp or catch which holds up the hammer-head and allows it to fall or drop. It is raised by the friction of two rolls which revolve rapidly, gripping the surface of a board which is wedged into a slot in the top of the hammer-head or ram. The hammer-head is clamped or latched at the end of the upstroke by an automatic attachment and released at the will of the operator.

The hammer-head or ram is made usually with a dovetail opening at its bottom, into which is placed the upper die. It is held firmly in position by a key driven into place by sledging. The base or anvil of the drop-hammer is made of cast iron or cast steel, and a forged steel seat or holder for the lower die is keyed into the base in a similar manner. This seat or holder is frequently called a "sow" or "shoe," and is adapted merely to save useless wear of the base. It can be renewed at a small cost. A similar dovetail opening is made in this holder into which the lower die is placed. This is keyed into exact position to match the upper die so that when the faces of the dies meet at the end of the down stroke the complete impression is formed.

Drop-hammers are made generally of cast iron, i.e., the base or anvil, the side rails or guides and the lifter frame. The working parts are made from forged steel. Various heights of the fall or drop of the hammer-head can be had by shifting a "latch" or "dog" on the operating rod. From six inches to five feet fall can be obtained if desired. Foundations are best made of solid concrete. In connection with the drop-hammer a press is used to remove by a trimming operation the "flash" or surplus metal which spreads out between the dies after the impression therein is filled. This "flash" is sheared off either hot or cold as the character of the work permits.

**Making the Dies.**—A model of the part to be forged is made, usually of wood, if it be a form not clearly shown by a drawing. When given this model or a scale drawing and the required weight of the finished forging, the die-sinker has the principal data required by him to make the dies. After selecting the proper size blocks which have been planed smooth and made with dovetails or shanks, the die-sinker determines from his model the best parting line for the forging in much the same way as does the pattern-maker on a pattern for a casting, but the analogy between the two is comparatively slight as the conditions are radically different.

The pattern-maker can use cores and loose pieces to make cavities and overhanging parts, but the die-sinker is practically limited to a die opening in two parts, which must be made to stand the roughest usage. The outline of the piece to be forged is drawn on the surface of the die which has been coppered with a blue vitriol solution, this causing the lines to stand out sharply. The metal is then removed in a manner that is most expedient for that particular example. If the outline be circular the stock is turned out on a lathe. If the shape of the forging be such that other means are required for removing the metal from the die, the profiling machine readily furnishes a way for following the most complicated forms by means of milling cutters of various shapes and sizes. The shaper and milling machines are also impressed into service as well as the planer and drill.

Chipping by hand is commonly done, and in nearly every case a file, riffler, scraper and some emery cloth are required to finish the impression to the required smoothness and regularity.

The forming of an irregular cavity in the face of a high carbon steel die so that when its mating die is matched to it the shape of the space enclosed will not vary from the specified dimensions more than 2-1,000ths of an inch either way is an operation requiring skill and patience.

After the complete impression is made a proof can be taken by filling the cavity with melted lead. A shallow space is cut in the face of each around the impression. This is technically called the flash of the die. As it is practically impossible for the drop-forging to form the bar or billet of steel into just the shape and size required for the forging, this space must be left for the overflow of surplus metal.

If the article to be forged is of a simple form only one pair of forging dies is necessary as the "roughing" or "breakdown" impressions can be cut in the same pair of blocks which contains the finishing impressions. If the piece be more complicated, separate "roughing" or "breakdown" dies are necessary.

Trimming dies, to be used in the press, are necessary to remove the flash. They are made in male and female form; the upper part being the male die and the lower one the female. The male die is made of the outline of the forging through the parting line, and with its face conforming to all the irregularities of the upper part of the forging. The female die is open at the bottom so that the trimmed forging can fall through it into a receptacle under the press. It is also made with its cutting edge conforming to the parting line.

The dies are then heated carefully in furnaces, the heat of which is usually determined by a pyrometer to ensure uniformity of temperature, and are then hardened and tempered. Any warping in hardening which may occur is remedied by grinding the surfaces with an emery wheel. See DIES AND DIE MAKING.

The operation of drop-forging consists of first heating the bar or piece to a proper temperature. The heat depends entirely on the quality of the metal used. It is then placed in the "roughing" or "breakdown" impression and given a number of blows which shape it roughly into form and it is finally placed in the finishing impression and forged to the exact shape. The flash is then trimmed off in the press and the forging is practically complete.

The number of blows required depends entirely on the shape and size of the forging. Some pieces can be made by two or three blows while others may require as many as 100.

If the forgings are made of high carbon steel it is frequently necessary to anneal them so that they can be readily machined, and in many cases pickling in a weak solution of sulphuric acid is resorted to, so as to remove the scale or oxidation which forms on the surface of each forging while cooling.

Drop-forgings can be made from iron, steel, copper, bronze or aluminum, or from any metal which will not disintegrate during heating or while being worked. For instance, brass cannot be forged successfully. They can vary in weight—from a fractional part of an ounce to over 100 pounds each.

**Upsetting and Forging Machines.**—Toward the close of the 19th century it became recognized that forging could be accomplished by pressure as well as by blows, and this idea was developed into the commercial upsetting and forging machines which now handle the bulk of small parts and a good many large parts of modern machines. Hammer-blows cause jar and vibration which are destructive to the machine itself, and require heavy foundations, heavy bed-plates, etc. The pressure machines do their work with less noise and more scientifically. The very much reduced cost of building automobiles and a great variety of duplicate machines that are turned out in large numbers is due largely to the quick shaping made possible by machine forging. An upsetting and forging machine is made with a very heavy steel bed. The opposed dies for gripping the work are gripped in the machine, and the pressure is applied by a toggle-joint mechanism. In all such machines it is necessary to limit the pressure, else excess would break the machine. This limitation is accomplished in two ways—by placing heavy springs in the machine which give when a certain pressure is attained; and by locking the back of one of the die supports with a bolt of a given strength, arranged between hard square edges which will cut or shear off the bolt when the pressure reaches above a given point.

The method of making a common hexagonal nut in such a forging machine consists in (1) placing the dies in the forging machine; (2) heating a bar of iron between 1,400° and 1,600° F.—the temperature varying with the character of the iron; (3) thrusting the red-hot end of the bar into the lower die in the forging

machine, and throwing the lever to cause the machine to squeeze, which upsets the end of the bar and shapes it for a nut; (4) withdrawing the bar quickly and placing in the upper die; (5) repeating the squeeze, which forces the hole through the nut, leaving the removed metal on the bar, and separating the nut. The nut is delivered with a slight fin, which has to be removed, when it is ready to go to the thread-cutter.

The front axle of an automobile may be forged in one of these pressure forging machines in about seven operations. The last squeezing operation delivers the completely formed axle. Any quantity of more or less intricately formed parts are now made of wrought iron and steel in this manner, the heavier operations being done on the steam-hammer, as a rule.

The forging machine is also used for welding or joining separate pieces by pressure. It is just as easy to apply a flux to assist the joining in the forging machine as on the anvil. The Ajax universal forging machine not only compresses the dies, but has an independent vertical press that can be used for any operation within its capacity; also a punching device and a trimmer.

A variety of special forging machines are made for forming common articles, or parts required in large quantity. Many of them are named after the work they accomplish. The hot-pressed centre-feed nut machine is simply a small forging machine designed for making nuts. Bolt-heading machines and bolt and rivet headers are other examples of special forging machines.

Pressed steel is made by great hydraulic presses at the steel works. Pieces requiring but slight shaping are pressed in the cold; more or less complicated forms are heated to a cherry red and then light-pressed. Modern railway steel cars are made in this manner. Armor plates are formed in hydraulic presses under immense pressures which are maintained for a considerable time.

CHARLES H. COCHRANE

**MACHINE GUN.** An automatically reloading weapon of small calibre which discharges several bullets per second when pressure is maintained on the trigger; the weapon most destructive of life in modern warfare. There are four general classes of machine guns as to size—submachine guns, and light, heavy, and special machine guns. They may also be classified as gas-operated and recoil-operated, depending upon whether the automatic reloading is accomplished through the action of a part of the escaping gases of each exploding cartridge, or through the action of recoiling parts. Other classifications are based on belt-feeding and magazine-feeding, and air-cooling and water-cooling. Belt-fed guns use cartridges held in the loops of a narrow belt, usually of cloth, which contains several hundred rounds and moves rapidly through the feeding and firing mechanism during firing, until the belt is exhausted and the first cartridge of a new belt must be engaged into the mechanism by hand. Magazine-fed guns use metal cartridge containers (magazines) which are inserted full of cartridges in a receptacle of the gun and remain there till emptied, when, for further firing, the



empty magazine must be removed and a full one inserted. Both belts and magazines can be reloaded and used repeatedly.

Air-cooled guns have projecting, and usually circular, metal fins along the outside of the gun barrel to radiate away the heat generated by firing, and make use of the movement of air over these fins to cool the gun. Water-cooled machine guns have a cylindrical water jacket or tank around the barrel for the same purpose. Air-cooled guns as a rule become hot more readily than water-cooled. With either, it becomes necessary after a few minutes of continuous firing to cease firing and allow the gun to cool off. Otherwise the barrel becomes red hot and its metal softened, so that further firing destroys the accurate rifling within the barrel. Since it may be necessary in combat thus to spoil a barrel, spare barrels are carried for most types of heavy and special machine guns.

**Submachine Gun.**—This is a magazine-fed weapon of about the weight of a shoulder rifle. It is usually held in both hands and fired from the waist, but can also be fired from the shoulder. The best known type is the Thompson, which uses calibre .45 pistol ammunition in magazines holding 20 or 50 rounds. It is a powerful weapon for fighting at close range, and is used by police and criminals as well as by armies. This weapon is standard equipment in the cavalry of the United States Army, where it is used as a close-in-defense weapon for armored scout cars and combat cars (tanks) and as a weapon for motorcyclists. It is also used in the United States Marine Corps.

**Light Machine Guns.**—The term «light» simply means that the gun and its mount, usually weighing under 25 pounds, and a few hundred rounds of ammunition can readily be carried in combat by a single soldier, though others must carry enough additional ammunition for the sustained firing of battle. All light machine guns are air-cooled and most of them magazine-fed. This class strictly includes also the «automatic rifle», a fast-firing shoulder weapon without a mount. The automatic fire of this weapon, however, cannot be held to accurate aim. Consequently, in the United States Army, a folding bipod mount attached near the muzzle and a small, adjustable, single-stand mount attached to the stock have been used to convert the standard Browning automatic rifle, an air-cooled, gas-operated weapon, into a light machine gun. This weapon is still fired from the shoulder like a rifle by the soldier in a prone position, but the additional points of contact with the ground have much increased its accuracy.

Light machine guns, because of possible overheating, are not capable of the high rate and sustained periods of fire of heavy machine guns. The actual rate of automatic fire of most light machine guns is from 250 to 500 rounds per minute. But to avoid overheating and waste of ammunition, they are fired in bursts of four or five rounds, with intervals of several seconds between bursts to observe the effect of the firing and regain accurate aim. Also, time is consumed in exchanging empty magazines for loaded. Hence the maximum practicable rate of fire is seldom over 100 rounds per minute. Most light machine guns can also be limited to single-shot fire by a simple lever adjustment.

In most armies of the world, both light and heavy types of machine guns are of the same calibre as the standard infantry rifle, and thus use the same ammunition. In the United States Army, all machine guns except certain special types are calibre .30.

Light machine guns are used mainly for direct fire against hostile targets visible to the gunner. The method of operation is similar to that of the heavy machine gun in direct fire described below. For tactics of light machine-gun units see INFANTRY.

**Heavy Machine Guns.**—The weight of a heavy machine gun and its mount and accessories requires its transportation by some other means than carrying by hand, except for short distances in actual battle. Hand-drawn or animal-drawn carts, pack animals, and small motor-truck carriers are all used. The United States Army, between 1930 and 1940, changed from animal to motor transport for heavy machine guns, in all but a few units. European armies, by 1940, were still using animal transport in the main. Tanks and armored cars, and fighting types of airplanes, also are essentially machine-gun carriers of special types. When heavy machine guns must be carried by hand, one member of the gun squad carries the gun, and eight or ten others carry the tripod mount, the extra water containers (for water-cooled guns), the spare barrels and other accessories, and the boxes of ammunition belts or magazines, so that each carries from 25 to 40 pounds.

Heavy machine guns may be either air- or water-cooled and almost all types are recoil-operated. The automatic fire rate of heavy machine guns is from 450 to 600 rounds per minute for those used in ground combat. These are also fired in short bursts, so that the maximum practicable rate of fire is about 250 rounds per minute for ground combat.

**Operation of Heavy Machine Guns.**—In combat on the ground heavy machine guns are usually fired from a low, sturdy tripod mount to which the gun is firmly clamped. A fixed mount of some kind is necessary. The gunner sits or lies behind the gun to aim and fire it. The tripod has an elevating and depressing mechanism operated by a handwheel for moving the gun up or down, and may also have a traversing mechanism, similarly operated, for moving the gun laterally. Some types require traversing to be done by heavy blows of the hand against the tightly clamped gun to turn the gun and its pintle in the socket of the mount. Most heavy machine guns permit a 360° traverse without moving the tripod, although the gunner can only traverse about 120° without moving around to a new position.

Before firing, the gunner adjusts his aim through sights similar to those of a military rifle. The point of aim may be an actual hostile target, such as troops, in «direct» machine-gun fire; or an established aiming point, such as a mark on a stake, in «indirect» fire conducted at hostile targets not visible to the gunner. Since vibration and smoke make it impossible to look through the sights during firing, the gunner, in direct fire, observes the effect of his fire over the top of the gun and sights, usually by watching the dust or earth raised where the bullets strike the ground. In indirect fire the gunner cannot observe. In both kinds of firing, the gunner pauses briefly after every few bursts to



check his aim through the sights because vibration may settle the mount in the ground. To obviate such settling, bases of wood or concrete, with sandbags or clamps to hold the legs of the tripod solidly in place, are used in machine-gun emplacements of permanent or semipermanent defensive positions.

The fire of heavy machine guns may be directed at a "point" target such as an enemy machine gun or a small group of men, but is mainly used to cover areas of some width and depth. Owing to the vibration of the gun, the discharged bullets do not follow accurately in the same path of trajectory. At a range of half a mile, for example, the bullets strike level ground within a beaten zone which is about 150 feet long and 10 feet wide. Consequently, if a burst or two is fired at one setting of the gun in elevation, and the gun is then alternately fired and traversed through a slight angle in one direction (continually to right or left) a series of adjacent beaten zones of any desired total width up to several hundred feet can be covered by fire. As an example, an area 300 by 300 feet may be assigned to a single gun. By alternately traversing and firing from one side of this area to the other, the gunner covers the full width of the area and about one-half (the nearest half) of its depth, except for the ground sheltered behind rises and depressions which the flat trajectory of the gun cannot reach. The gunner then increases the range by elevating the gun enough for the fire to strike the farthest half of the square area, and alternately fires and traverses in the opposite direction, and thus covers the whole area with fire. By alternately firing bursts and traversing (or elevating or depressing) the gun, the gunner can cover an area of any shape with fire.

For direct fire, heavy machine guns are usually placed in pairs to insure continuous fire in combat because the firing mechanism occasionally jams. Gun squads are thoroughly trained to remedy most stoppages in a few seconds. The two guns of a pair are fired from positions far enough apart to prevent the destruction of both by a single enemy shell but close enough for fire direction under one leader. The two guns of a pair may cover the same area or point target with their fire. But for targets wider than approximately the angle subtended by 100 feet at 1,000 feet, each gunner usually fires on half of the target width. For direct fire on extremely wide targets, four guns may be fired under the direction of a single leader. Guns are used singly only when an extended front must be covered by few guns. Direct machine-gun fire is considered effective at targets up to ranges of about a mile. Beyond that range the effect of the fire cannot be observed, even with field glasses.

Indirect fire, on areas out of sight of the gunners, is effective up to about two miles with accurate, modern, heavy machine guns. For this fire, the guns are usually employed in batteries of four under the direction of one officer. The data from which are found the elevation and directions for pointing the guns to hit the unseen target, are calculated in two ways. Ranges and angles-of-direction may simply be measured on an accurate map or airplane photograph containing the positions of the target and the guns. Or ranges and directions may be measured directly on the ground from some high point from which

the guns and the target can both be seen. For the latter method, an optical instrument called a range-finder is used to measure ranges, a magnetic optical instrument such as an aiming-circle, is used to measure vertical angles from the north and horizontal angles. The horizontal angles and ranges from the observation point to the target and to the guns are plotted on a drawing board. A line is drawn from guns to target, the range measured with a scale, and the direction-angle with a protractor. This procedure amounts to a simple survey, and may be expanded to include one or more intermediate observation points between the guns and the point from which the target is visible.

The rapidity of such surveys depends largely upon the accessibility of the observation points. If most of the distance can be traveled in a motor vehicle, a survey from a single observation point can be completed in a few minutes, and the result either signalled or taken back to the guns. To determine the correct angle-of-elevation for the guns to hit the targets requires a simple calculation to allow for the difference in elevation of guns and target, and then a reference to a brief set of firing tables in which range is converted into angular measurement. The guns are then turned and raised to the correct angle. Firing may begin then, or at any time later when the enemy is known or suspected to be occupying the area at which the guns are directed. Surveys are often made, and data calculated and recorded in advance, for a number of possible future targets.

**Organization and Tactics of Light and Heavy Machine-Gun Units.**—In a broad sense there are no separate tactics for light or heavy machine guns. During the World War of 1914-18, heavy machine-gun units were organized in battalions of three or four companies each manning about 12 guns. The experience of battle proved, however, that three battalions could seldom be used in combat as units, and that even companies had to be split into their separate four-gun platoons for purposes of combat. The battlefield also proved that machine-gun units have no tactical uses distinct from those of the infantry rifle units. And as a result, the tendency in all armies after 1918 was to include heavy machine-gun units in infantry battalions or regiments in the ratio of about one company (12 guns and some 200 men) to three rifle companies (some 600 men), and to include light machine-gun units within the rifle companies and smaller units. Except for the fact that some heavy machine guns were replaced by special antitank machine guns in 1938, this is now true in the United States Army as in other major armies. See INFANTRY.

The part of the machine gun in infantry tactics, both offensive and defensive, is that of a powerful supporting weapon. In an attack, light machine gunners keep close in rear of the leading riflemen and fire to the front through gaps between rifle units, and also across the front of adjacent rifle units which have been held up by hostile fire. Heavy machine guns, from positions farther back, usually on high ground, fire over the heads of the advancing rifle units or along their flanks, as long as it is safe to do so. When the rifle units (including light machine-gun units) have advanced some distance against the enemy, say half a mile, heavy machine guns are rapidly loaded into light cross-country motor

carriers and moved forward to new positions from which they can again support the rifle troops. About half of the heavy machine guns supporting a given number of rifle units are thus moved forward at a time, and the other half are kept in the original firing positions until the others are firing from their new positions. The rear guns then move forward to new positions. This movement forward by bounds from one supporting position to another continues until the leading rifle troops reach and occupy the final objective.

In an attack, the fire of supporting light machine guns and often that of heavy machine guns, is almost always placed on hostile resisting elements, such as groups of riflemen and machine gunners, whose positions are either definitely known or suspected. Whenever possible, fire is delivered at enemy elements whose fire is liable to prevent the continued advance of the rifle units leading the attack. Only when the irregularities of the ground prevent direct fire do heavy machine-gun units employ indirect fire upon areas liable to contain enemy troops but not definitely known to. Thus, in offensive combat, the fire of light and heavy machine guns is never simply an aimless hail of lead striking the general areas that the enemy holds. If there are no known or suspected targets for machine gunners to fire upon, they save their ammunition for a more effective use later on.

If tanks are assisting the leading rifle units in the attack, the work of light and heavy machine guns differs little from that already described. In defensive infantry combat machine guns are the most important weapon. See INFANTRY.

**Airplane and Tank Machine Guns.**—The heavy machine guns used in the airplanes of an army are usually of the same types used by ground troops except for being air-cooled instead of water-cooled and for having special mounts. Modern fighting planes have as many as eight guns mounted under the wings to fire forward and operated by a single trigger from the cockpit. For air fighting these guns are given a high rate of fire, above 1,200 rounds per minute in some types. For defense against attack by hostile planes, bombardment and other large types of planes have heavy machine guns mounted in cockpits for individual fire upward and downward and to the sides and rear.

Both air- and water-cooled machine guns are used in tanks and armored cars. See TANKS and ARMORED CARS.

**Special Types of Machine Guns.**—Special machine guns include such weapons as the calibre .50 antitank machine guns used by the infantry and cavalry of the United States Army, and calibre .50 antiaircraft machine guns used by the Coast Artillery Corps. Some fighting aircraft carry such machine guns and they are also mounted in tanks and armored cars. They may be either air- or water-cooled and are recoil-operated and usually belt-fed. They fire bullets several times the weight of those used in rifles and heavy machine guns. Antitank machine guns are mounted on low tripods and antiaircraft machine guns on high ones. Both weigh so much that they are carried by hand only for short distances and are largely transported on motors.

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## MACHINERY-MANUFACTURING INDUSTRY IN AMERICA.

Owing to the restrictive measures of Great Britain this industry made a late start in America, but when a beginning was made, the very laws by which the mother-country sought to make the States dependent on her proved more stimulating to the development of our machinery-manufacturing industry than the most rigid system of protective tariff would have been. Great Britain wished to confine manufactures to her shores and compel the American colonists to buy their manufactured articles from English factories. At first the colonists were not allowed either to manufacture or to import machinery. In the year 1774 a statute was enacted by Parliament instituting the restrictive system as to textile machinery. This statute was made more stringent in 1781, and it was not actually repealed till 1845. This act prohibited the exportation of "any machine, engine, tool, press, paper, utensil, or implement whatever, which now is, or may at any time be, used in or proper for the preparing, working, pressing, finishing, or completing of the linen, cotton, wool or silk manufactures of this kingdom, or any other goods wherein wool, silk, or cotton is used, or any part of such machine, etc., or any model or plan of any such machine," under penalty of forfeiture of the tools or machine, the payment of a fine of £200 and imprisonment for one year. Further, foreigners were prohibited, under a penalty of £500 and imprisonment for 12 months, "from seducing artificers, and others employed in the manufactories, to depart out of this kingdom; and if any artificer has promised or contracted to go into foreign parts to practise or teach his trade, such artificer may be obliged to give security, at the discretion of the court, that he shall not go beyond the seas, and may be committed to prison until he give such security."

These laws were rigidly enforced; and it was seldom that they were evaded. It was impossible even to smuggle a textile machine into this country; and the models that were surreptitiously imported were imperfect. Tench Cox, the coadjutor of Alexander Hamilton in the Treasury Department, made arrangements to have models of Arkwright's patents sent to him; but before they could be shipped they were detected and forfeited. In 1786 the General Court of Massachusetts appointed a joint committee to investigate textile machinery; and this led later to the employment of Samuel Slater and to the real beginning of machinery-manufacture in this country. Slater landed at New York 17 Nov. 1789; and in the following January he made arrangements with Messrs. Brown and Almy, of Providence, R. I., to construct for them textile machinery on the English plan. He made most of the machinery with his own hands and set it up at Pawtucket, R. I. This was the first textile mill in this country to use the Arkwright system. It was opened 20 Dec. 1790. It must be remembered that Slater brought with him from England no implements to work with, and no plans or models. He had to depend entirely upon his memory. Alexander Hamilton called him "the father of American manufactures"; but, in the first place, he was the father of American machinery. Up to the time of his coming there were no machines in this country, with the exception of the rude saw-mill, grist-mill and fulling-mill; some rolling and slitting

mills, foot-lathes, and a few home-made carding and spinning appliances. The first carding-machine worked in the United States was constructed at Newburyport, Mass., in 1793, by John and Arthur Scofield. Until then the household looms were the only domestic source of supply of woollen cloth.

At this time the manufacture of metal working machinery was in its infancy. The lathe was known only in its simplest form, i.e., two dead centres supporting the work as it was rotated backward and forward by a band around it, one end attached to a spring-pole above it, the other end to the foot of the operator, who held the turning-tool in his hand. Even after the lathe had been provided with a revolving spindle and centre to support and rotate the work, the tools used for turning both wood and iron were still manipulated by hand. The increasing demand for accurately-cut cylindrical iron pieces, which could not be made by hand, led to the general use of the slide-rest. Formerly used only by the optician and the maker of mathematical instruments, it now became a necessary adjunct of the mechanic's lathe. This gave the lathe practically unlimited capacity to turn out exact cylindrical work; but in order for the slide-rest to do its work, it had to be manipulated by the workman. The next step was naturally the introduction of the slide-lathe, by which the rotation of the work and the advance of the cutting tool are accomplished automatically. Owing to the lack of suitable tools to make the long flat surfaces required in such a machine, the slide-lathe had a curious development. The hammer, file, cold-chisel and straight edge were the only tools at hand. The planing-machine was the development of a demand for greater accuracy in the slide-rest. It marked an era in the life of the machinist as great as that of the slide-rest itself. It is doubtful when the first planing-machine was made in the United States; but we know that there were only four such machines in this country in 1838. With this machine the rough and uneven surfaces of castings could be smoothed and reduced to true planes. Up to this time the drill had been limited to a revolving vertical spindle. The boring-mill or vertical lathe was now possible and took its place in the machine-shop for the execution of a large class of turned work that did not require to be supported on centres, such as wheels to be keyed upon their shafts. In fact, the first development of the planing-machine was the key-seating machine. It was soon recognized that such a machine could be turned to other work, and further changes were made accordingly. It was provided with compound slide-rests, with a revolvable table mounted thereon and in this form it took its place as a standard tool in the machine-shop under the name of the slotting-machine. This planer, with its vertically movable tool, was the progenitor of a machine with similar attachments, but with its tool moving horizontally, upon which work could be conveniently shaped in a great variety of forms; and the shaping-machine, as it was called, soon became one of the standard tools of the machine-shop. Meanwhile, the old vertical spindle drill, with its compound tables, movable vertically and adjustable horizontally, in two directions at right angles with each other, had been supplemented by the horizontal drill, with similar tables, but with its drill-spindle parallel to the tables; and the fur-

ther requirements in this direction had been supplied by the radial drill, in which the vertical drill-spindle is movable about a vertical axis, to which it is adjustable radially.

However, there were other factors entering into the development of our machinery industry. There were other requirements beside these machine-tools, and which these supplied inadequately. Screw-bolts and nuts were needed for putting the machines together. Originally iron screw-bolts had been made by means of a split die provided with spiral threads, by rotating either the bolt or the die backwards and forwards until the thread was partly cut, while a taper-tap was screwed into the nut first from one side, then the other, until the bolt was found to fit into the nut. These bolts were not interchangeable. This primitive system of bolt-manufacture continued until 1847, when the solid die with sectional threads patented by Philetus W. Gates was generally introduced. This die cut the thread at one pass, then the rotation was reversed to unscrew it from the bolt, which marked the thread and was liable to mutilate the die. No compensation for wear was possible. Nothing approaching perfection was attained until 1857, when William Sellers devised a bolt-machine in which dies to cut the thread at one pass, and adjustable to size, could be opened and closed while running continuously in one direction. Since then ordinary screw-bolts have been made interchangeable. In a few years this machine of Sellers' was introduced into England and also continental Europe. The first turret lathe was built by Stone in 1854. It was provided with automatic mechanism for turning the turret in 1855, and perfected to its present condition in 1858. The gear-cutter was another of the early machine-shop tools. This was simply a revolving milling-cutter, mounted upon a spindle above the dividing-plate. The wheel to be cut was forced against this. The machine was adjusted by hand. Such work was slow and very expensive; and up to 1867 the teeth of nearly all wheels, even for fine machines, were cast. In this year a machine was devised by William Sellers which limited the work of the operative to adjusting the wheel to be cut to the cutter. The machine was otherwise automatic; and it was now possible for one workman to attend to several machines, thereby greatly diminishing the cost of such work. From that time cast wheels have been no longer allowable in first-class machines. Another typical machine-tool that deserves mention is the milling machine. It has received its greatest development in this country. The manufacture of metal-working machinery has become highly specialized, and only the older establishments produce a number of different types of machines. New establishments usually make only one type of machine, or at most one class embracing tools of similar type. Some establishments make only engine-lathes, others only planers, others nothing but milling-machines. The effect of specialization has been to make machine-tools more efficient, and, it may be added, more varied. If, for instance, a new construction is designed, as in the automobile, or airplane, and strangely fashioned parts are required, a machine that will make these parts is always forthcoming.

The development of more accurate machinery, as indicated above, led to the system of interchangeability. In the manufacture of

machinery this is an economic principle of the greatest importance. Under more primitive methods individual parts had to be fitted together with great difficulty and at much expense. Now all these parts are made by machines with such exactness that they are completely interchangeable; and there is no longer any question as to their fitting. This method of manufacture has increased the output of the individual workman and reduced the cost of production tremendously. Though first applied in Europe, it remained for the United States to demonstrate its feasibility and actually put it into successful operation, and it is generally referred to as the American system. For the economical manufacture of any kind of machinery in which many parts are to be interchangeable certain definite conditions must be met; and success economically requires that every part shall be finished without the intervention of a skilled workman. The machine must be so designed that it will not only work automatically but work with a high degree of accuracy. Reference standards must be provided with which to compare the several parts in order to determine the amount of variation permissible between the standard and the product; every part must come from the machine in the final finished form. Such are some of the details that make necessary a careful study of every part in order to design a machine that will perform each operation with the most efficiency.

The principle of interchangeability was first suggested and put into operation in a small way by Le Blanc, in France. Its importance and possibilities were at once recognized by American inventors, and its first application in the United States was in the manufacture of fire-arms in our government arsenals under the direction of Eli Whitney, the inventor of the cotton-gin. Simeon North, a maker of pistols, and a neighbor of Whitney, also adopted the system. By 1818 both of these men were using drilling and filing jigs. The growth of the system was slow, being confined for a time to the principal parts; but even in this undeveloped condition it proved successful economically. In 1822 Calhoun, who was then Secretary of War, remarked to Whitney that his improvements were saving the government \$25,000 a year at the two public armories. The drop-hammer and dies were first used by Hall, at Harper's Ferry in 1827. Whitney adopted this machinery and thus was able to cut from red-hot metal all the smaller parts of a gun in a form closely approximating the finished article. These forged parts were then subjected to the more accurate milling-machine, which turned out the parts in uniform condition, no matter how varied their shape may have been when they came from the forging-press. It only remained for the drill to fashion the bearings for the working parts and bore the holes to secure the parts together. This was a comparatively simple matter when once the order of procedure had been determined and the guiding templates or jigs provided. The wooden stocks of the gun were also made by machinery and with sufficient accuracy to make them interchangeable. This was accomplished by means of a turning-lathe designed by Thomas Blanchard and patented by him in 1820. After the stock came from the lathe the groove for the barrel and the cavity for the lock were hollowed out by special

machinery. Measured by the standards of to-day all this work was crude; but the gun of that day was itself crude, and these roughly interchangeable parts served their purpose. Machine-tools were then both inaccurate and limited in variety, so that they could not be expected to turn out the various parts with mathematical accuracy. Further, at that time there were no such delicate measuring instruments as we have to-day. The most refined measuring instrument known then was the vernier caliper; and the smallest deviation from the standard that could be detected with this contrivance was, at best, perhaps the thousandth part of an inch. In 1848 the interchangeable system was applied to watch-making at the Waltham factory, and in 1850-51 it was adopted for sewing-machines. The profiling machine was developed between 1848 and 1852 by F. W. Howe and E. K. Root. Since then have come great developments in the quality of machine-tools and in their wonderful adaptability to changing needs. Measuring instruments have now been so highly developed that a variation of the twenty thousandth part of an inch can be detected immediately and with perfect accuracy.

Foreign countries did not remain indifferent to the success of the United States in the employment of the principle of interchangeability of parts. Various commissions were appointed to investigate the system; and, as remarked above, the economic success of the United States in producing interchangeable parts led to the adoption of this method in Europe. In 1854 the Colt factory was established at Hartford, and shortly afterward a British commission bought from them a full outfit of machinery for making the Enfield rifle on the interchangeable system. Between 1870 and 1880 our large machinery manufacturers were kept busy filling foreign orders, especially for gun machinery. Large orders for such machinery were received from the German government; and it was even stipulated in the contract that the manufacturers should send over men to set up the machinery and instruct native workmen how to run it. Other governments began to look to us for their machinery; and thus our system for the manufacture of interchangeable parts was gradually established in England and continental Europe. This principle of interchangeability, first applied to the manufacture of fire-arms, then to pistols, has now been extended to practically every kind of machine. The sewing-machine, the typewriter, the bicycle, the watch, the various kinds of agricultural machinery, the gasoline engine, and notably in the automobile, may be mentioned as types showing the economic value of the principle of interchangeability. All our large machinery manufacturers are represented in foreign countries, and certain types of American typewriters, sewing-machines, cash registers, mowing-machines, reapers, etc., are just as well known there as they are here. American textile machinery and shoe-making machinery play an equally important part.

The giving of detailed information of the entire machinery-manufacturing industry of the United States is well nigh impossible, due to its many ramifications, but the following facts and figures are both interesting and instructive. The machinery manufacturing industry includes many categories, chief of which in value of products is the automotive industry. Following

in order are motor vehicle bodies and parts; electrical machinery; agricultural implements; mechanical refrigerators, machine tools and foundry and machine shop products and forgings. Other classifications, as given in the census of manufactures, are gas machines and gas and water metres; pumps and pumping machinery; sewing machines; textile machinery; typewriters and supplies; washing machines and ironers; locomotives and railway cars; ships, and engines and water wheels. The total value of motor vehicles and of automobile bodies and parts in 1938 was \$5,176,235,000. The 1,067 establishments engaged in these industries in that year employed 478,341 workers and paid out \$756,080,000 in wages. The number of plants engaged in the making of carriages, wagons and sleighs showed a steady decline during 24 years from 1914 to 1938. In 1914 there were 4,662 establishments. In 1927, the number had declined to 117 and in 1938 the total number of plants was 43 with a total output of products valued at \$9,138,453. Heavy transportation machinery such as locomotives and railroad cars also declined materially in number of plants and in value of output, the total value of locomotives being only \$72,123,000.

In 1938 the number of establishments producing machinery, exclusive of those making transportation products, was 6,876. These plants employed 816,948 workers who earned \$1,180,429,000 in wages and produced output valued at \$4,790,151,000. In 1927 the number of establishments was 12,037; the number of workers was 886,427; the wages paid amounted to \$1,287,778,000 and the value of the product was \$5,368,015,000.

The number of establishments making transportation equipment in 1938 was 1,870. These employed 615,064 workers and the total of wages paid amounted to \$957,098,000. The value of the output of the plants was \$5,910,699,000. In 1927 the number of plants was 2,537 and in these 494,905 workers were employed and earned wages totaling \$803,298,000. The output of finished product was valued at \$4,693,972,000. In 1914 there were 7,818 plants; 312,562 employees who earned \$230,615,000 and the output totaled \$1,137,423,000 in value.

The value of machinery manufactured in 1938, exclusive of transportation equipment, totaled \$4,790,151,000. Agricultural implements, including tractors, made in that year were valued at \$554,778,000. Electrical machinery was valued at \$1,622,098,000. Electrical refrigerators had a value of \$363,178,000. Foundry and machine shop products and forgings had a value of \$520,138,000. Engines and water wheels produced were valued at \$194,695,000; pumps and pumping equipment, \$198,721,000; machine tools, \$260,242,000; sewing machines, \$34,835,000; washing machines, \$69,888,000. Aircraft production in 1938 was valued at \$106,568,000 against \$21,162,000 in 1927.

See **HARDWARE INDUSTRY**; **FARM MACHINERY**; and articles on special types of machinery.

**MACHPELAH**, māk-pē'la, **Cave of**, Hebron, Palestine; in Old Testament history the burial place of the patriarchs. Upon the traditional site stands a superb mosque which only Mohammedans are permitted to enter, although by a special firman of the sultan the Prince of Wales visited it in 1862, the Marquis of Bute in 1866 and the Crown Prince of Prussia in 1869.

**MACHRAY**, ma-kra', **Robert**, Canadian Anglican archbishop: b. Aberdeen, Scotland, 17 May 1831, d. Winnipeg, Canada, 9 March 1904. He was graduated at King's College, Aberdeen, in 1851, and from the Sidney Sussex College, Cambridge, in 1855. He was of Presbyterian stock, but joined the Church of England and was ordained deacon in 1855 and priest in 1856. He was appointed vicar of Madingley, near Cambridge, in 1862, and in 1865 he was Ramsden preacher at Cambridge. He was appointed bishop of Rupert's Land, Canada, in 1865, and was consecrated in May of that year. His diocese covered 2,000,000 square miles of territory with headquarters at the then hamlet of Winnipeg, and but 18 clergymen to assist him. He was active in the promotion of education, renewed and reorganized the defunct Saint John's College at Winnipeg, and himself lectured in ecclesiastical history, liturgiology and mathematics. He was one of the founders of Saint John's Ladies' College, and upon the establishment of the University of Manitoba in 1877 he became chancellor, retaining the office until his death. He had meantime organized his diocese with a view to serving the fast-increasing population. He became metropolitan of Canada under the primacy of the archbishop of Canterbury in 1875, and upon the union of the Canadian Anglican churches in 1893, he became archbishop of Rupert's Land and primate of all Canada. Consult Machray, Robert, 'Life of Archbishop Machray' (1909).

**MACHUELO**, ma-chwä'lō, Spanish name current in the West Indies for the thread herring (q.v.), an edible, shad-like fish (*Opisthonema oglinum*) of the Atlantic coasts of the United States and the waters of the West Indies.

**McILHENNEY**, Charles Morgan, American landscape painter: b. Philadelphia, 4 April 1858; d. 1904. Having studied under Frank Briscoe, he continued his training at the Academy of Fine Arts in Philadelphia, and soon began to win recognition in his chosen field. Among his best-known works are 'A Gray Summer Noon' (1884), and 'The Passing Storm' (1887); 'Old Friends' (1891); 'On the Beach' (1891); 'Gray Morning' (1892); 'September in the Marshes' (1893). In 1893 he was awarded medals at the Columbian Exposition and won the first Hallgarten prize.

**McILVAINE**, māk'il-vān', **Charles Pettit**, American Protestant Episcopal bishop: b. Burlington, N. J., 18 Jan. 1799; d. Florence, Italy, 13 March 1873. He was graduated at the College of New Jersey (now Princeton University), in 1816; entered the Princeton Theological Seminary in the same year, and was ordained deacon in 1820 and priest in 1821. His first pastoral charge was at Georgetown, D. C., which he left in 1825 to become professor of ethics at the United States Military Academy, West Point. He became rector of Saint Ann's Church, Brooklyn, in 1830, and in 1831 undertook the duties of the professorship of the evidences of religion and sacred antiquities in the New York University. He did not long hold the chair, however, as he was the next year elected bishop of Ohio, to succeed Bishop Chase, who had resigned the see. The question of the legality of such a resignation excited considerable interest in the General Convention of that year, but in the interest of the



diocese both houses agreed in approving Dr. McIlvaine's testimonials, and he was accordingly consecrated in Saint Paul's Chapel, New York. Upon his removal to Ohio he was elected president of Kenyon College, Gambier, founded by Bishop Chase, and held the position until 1840, acting also for some years as president of the theological seminary in the same place. During his long episcopate he came to be recognized as one of the most influential leaders of the Evangelical or Low Church party in America, and his ability and courtesy were cordially recognized by those who differed from him most widely. During the Civil War he was one of the four ambassadors informally appointed by President Lincoln to set before the English people what was considered in the North the real significance of the War. He published various sermons, addresses and more important theological works, mainly directed to defending the positions of his party in the Church.

**McILWRAITH**, māk'l-rāth, Jean Newton, (JEAN FORSYTH), Canadian author, daughter of Thomas McIlwraith (q.v.): b. Hamilton, Ontario, 1871. She was educated at Ladies' College, Hamilton, and studied English literature in the correspondence classes of Queen Margaret College, Glasgow, for 10 years, engaging in editorial work in New York in 1902. She is a frequent contributor to magazines and is author of 'History of Canada' in 'Children's Study Series' (1899); (joint author with William McLennan) 'The Span o' Life' (1899); 'The Curious Career of Roderick Campbell' (1901); 'The Little Admiral' (1924); 'Kinsmen at War' (1927).

**McILWRAITH**, Thomas, Canadian ornithologist: b. Ayreshire, Scotland, 1824; d. 1903. He was educated in Scotland and emigrated to Hamilton, Ontario, in 1853, where he spent the remainder of his life. He became known through his classification of the birds of Canada and his study of their habits, which subject he pursued as a recreation. He was a member of the conference of American ornithologists held in New York in 1883, out of which came the American Ornithologists' Union. He served for many years as superintendent of the district of Ontario for the Migration Committee of the American Ornithologists' Union. His first report of Canadian birds was published in the *Canada Journal* in 1861, and his 'Birds of Ontario' was published by the Hamilton Association (1886; author's ed., 1887; 2d ed., 1894).

**McINTIRE**, Samuel, American wood carver and architect: b. Salem, Mass., Jan. 1757; d. there 6 Feb. 1811. His influence upon architecture is exemplified principally in his native town, where houses of his design, construction and ornamentation are preserved and give to one of the streets such distinction that it has been termed the most beautiful of our colonial streets. McIntire had carved figureheads for sailing vessels, which made Salem foremost of seaports in the colonies and known to the Indies and China, and then he began building houses for the great merchant ship owners. They were most substantial structures, the house itself one of a group of buildings, four-square and three stories in height, the whole surrounded by a massive fence. They differed from other homes of this general plan in their details, in their heavily ornamented entrance ways, hallways, staircases and room decorations, wherein the wood carver

displayed his art in a manner that remains unsurpassed in this county.

His design entered into the Peirce house of 1779, and in 1780 he began the Derby house near the Derby wharf, and later the Boardman house on the Common, and the Forrester house. Meantime he was called upon to design other buildings such as the Assembly house and the court house in Salem, and in 1792 he submitted a design for the national Capitol. New influences were coming into American architecture in favor of more graceful forms, and McIntire did not hesitate to embody the new style in his plans, following after Bullfinch, and Adam in England, so that many of his later houses show less of massiveness and more of elegance. In the Read house he used carvings such as baskets of fruit and sprays of grapes which typify his methods of decoration. He displayed the new fashion in redesigning one of the Derby houses, the "Mansion," and carved many pieces for it from capitals to beading. As richly decorated was "Oak Hill" at Peabody, the home of a Derby daughter, the carvings here added to by McIntire's son Samuel after his death. Three of the rooms of this house have been transferred to the Boston Museum of Fine Arts and are described in a publication of the Museum. Decorations were also removed which are in the Pennsylvania Museum of Art.

His later houses were all built of brick, and included the Woodbridge and Tucker houses, and many carvings of his are found in other houses, not only as interior woodwork but in pieces of furniture bearing his characteristic ornaments of baskets, rosettes, eagles, the grape and laurel, and others used by him. Eagles he worked in on gateways, homes and large buildings, and some of these may be seen in the Essex Museum of Salem.

After his death it was said of him that all the improvements in Salem for thirty years had been under his eye. His son carried on carving, but died in 1819; and a brother, Joseph, and his son followed the art until the middle of the century. Consult Cousins and Riley, 'The Wood Carver of Salem' (1916); Swan, M. M. 'Samuel McIntire, Carver, etc.' (1934).

**McINTOSH**, Lachlan, American soldier: b. near Inverness, Scotland, 17 March 1725; d. Savannah, Ga., 20 Feb. 1806. He came with his father to Georgia in 1736, received there an ordinary English education, became a clerk in the mercantile establishment of Henry Laurens at Charleston, S. C., and was later employed as a land surveyor. At the opening of the Revolution he was made colonel of the 1st Georgia battalion, and became a brigadier-general in 1776. In 1777 he fought a duel with Button Gwinnett (q.v.), who was fatally wounded. In 1778 McIntosh was selected by Washington to lead a small force against the Western Indians, whom he subdued. In the siege of Savannah, 1779, he bore an active part. When Charleston surrendered to Sir Henry Clinton 12 May 1780, McIntosh was taken prisoner, and he never resumed his command. He was a member of the Continental Congress in 1784, and the next year as commissioner to the Indians he finished his public services.

**MacINTOSH**, William, a half-breed Creek chieftain, son of a Scottish trader: b. about 1780; d. 1 May 1825. In 1802 the United States undertook to extinguish the Indian titles to

lands within the borders of Georgia and in 1805 millions of acres of Creek lands were transferred to Georgia. The Creeks becoming alarmed at the prospect of being deprived of all their lands, on the motion of MacIntosh, now a chief, made a law in general council in 1811 forbidding the sale of any of the remaining land under penalty of death. MacIntosh led the Creek allies of the Americans in the War of 1812 with the rank of major and took the chief part in the massacre of 200 hostile Creeks at Atasi on 29 Nov. 1813. He also took part in the battle at Horseshoe Bend, Ala., 27 March 1814. More lands were acquired by treaty in 1818 and in 1821 another treaty was negotiated by the Georgians with MacIntosh, who was in the pay of the whites, and other chiefs controlled by him, while 36 chiefs refused to sign and demanded a general council. In 1824 about 10,000,000 acres still remained in the hands of the Creeks and in that year they re-enacted the law punishing with death any Creek who ceded land. In 1825 the whites, with bribes, induced MacIntosh and the chiefs under his control to sign a treaty ceding the remaining Creek lands. The treaty was approved by President Adams, but the Creeks did not rise in rebellion; they passed formal sentence of death on MacIntosh, which a party of warriors carried out.

**MACK, Norman Edward**, American politician and newspaper publisher: b. Buffalo, N. Y., 24 July 1858. He received a public school education, engaged in business and in 1879 established the *Buffalo Sunday Times*. In 1883 he began the publication of the *Daily Times*, of which he continued owner and editor. He was a delegate to the Democratic National Conventions from 1892, served as a member of the Democratic National Committee from 1900 and became its chairman in 1908. Died 26 Dec. 1932.

**MACK VON LEIBERICH, Karl, BARON**, Austrian military officer: b. Nennslingen, Bavaria, 24 Aug. 1752; d. Saint Polten, Austria, 22 Oct. 1828. He entered the army of Austria in 1770, and was in 1797 created field-marshal. After the peace of Campo Formio, he was appointed by the king of Naples to the command of his troops, and took the field against the French and occupied Rome; but a riot in Naples, caused by his having concluded an armistice with the French, forced him to take refuge in the French camp (1798). He was carried prisoner to Paris, but escaped in 1800 and in 1805 was sent to check the French advance alone the line of the Iller. But the enemy shut him up in Ulm, and on 17 October Mack capitulated with his army. He was tried by court-martial, but the sentence of death was commuted by the Austrian emperor to expulsion from the army and 20 years' imprisonment. In 1808 Mack was liberated, and in 1819 fully pardoned.

**McKAY, mäk-i', Alexander Charles**, Canadian educator: b. Beamsville, Ontario, 2 June 1861. He was educated at the universities of Toronto and Cambridge, England. He became professor of mathematics and physics at McMaster University in 1890, later holding the offices of dean of arts and registrar, and in 1905 he was elected chancellor of the university. After 1911 he was the principal of the New Technical School, Toronto. He col-

laborated in the preparation of mathematical textbooks.

**MACKAY, ma-kä' or ma-ki, Charles**, English poet, journalist and miscellaneous writer: b. Perth, Scotland, 27 March 1814; d. London, 24 Dec. 1889. He was editor of the *Illustrated London News*, 1852-59, lectured in the United States, 1857-58, and was a special correspondent of the London *Times* in New York during the Civil War (1862-65). He was famous for his songs, many of which he set to music of his own 'Cheer, Boys, Cheer,' is the best known of these.

**MACKAY, Clarence Hungerford**, American capitalist: b. San Francisco, 17 April 1874; d. New York, 12 Nov. 1938. The son of J. W. Mackay (q.v.), he succeeded on the death of his father to his vast business interests. Much of his boyhood was spent in France, and he was educated in Vaugirard College, afterward studying at Beaumont College, Windsor, England. He was chairman of the Commercial Cable Company, the Postal Telegraph-Cable Company, the Commercial Pacific Cable Company, the Mackay Companies, the Commercial Cable Building Company, the Postal Telegraph Building Company and the Commercial Cable Company of Cuba. He was also a director of the North American Telegraph Company and the Metropolitan Opera Company. He was one of the prime movers to raise funds for the purchase of the log cabin in which Abraham Lincoln was born.

**McKAY, Donald**, American shipbuilder: b. Nova Scotia, 1810; d. 1880. He went to New York and learned shipbuilding, and began the business at Newburyport, Mass. At East Boston, in 1845, he established a shipyard where he built many large trading ships of the clipper model, in which he made great improvements. The *Great Republic*, which he built in 1853, a ship of 4,500 tonnage, was a larger vessel than had ever before been seen.

**MACKAY, George Eric**, English poet, son of Charles Mackay (q.v.): b. London, 25 Jan. 1851; d. 2 June 1898. Among his works are 'Songs of Love and Death' (1865); 'Ad Regiam' (1881); the popular 'Love Letters of a Violinist' (1886); 'A Lover's Litanies' (1888); 'Nero and Actæa,' a tragedy (1891); 'My Lady of Dreams' (1895); 'Arrows of Song' (3d ed., 1896); 'A Lover's Missal' (1898).

**McKAY, Gordon**, American inventor and manufacturer: b. Pittsfield, Mass., 1821; d. Newport, R. I., 19 Oct. 1903. He was the son of a cotton manufacturer, and at 12, on the death of his father, learned civil engineering, at which he worked for some time. Before he was 21 he built a machine-shop in Pittsfield which employed 100 men, and later became treasurer and manager of the Lawrence Machine Company. He was the first successful inventor of machinery for making boots and shoes; he perfected a shoe sewing-machine, invented, but not made practicable, by L. R. Blake, of Abington, Mass.; afterward invented the heeler, lasting-machine, nailing-machine, etc., which came into general use; and by these inventions revolutionized the boot and shoe industry of the world. At the outbreak of the Civil War he offered to make the shoes for the Union army, and within three years had leased his

machines to more than 60 firms, and shortly became a millionaire. In 1878 he formed the McKay Sewing-Machine Association, a strict monopoly which exacted commissions on all shoes made in the United States by the aid of his inventions, and also brought profit through European royalties. In 1893 he placed \$4,000,000 in a trust fund for Harvard University. He made many other liberal donations for benevolent and educational objects, and established near Kingston, R. I., the McKay Institute for the manual training of colored youth. By his will the greater part of his estate was left to Harvard.

**MacKAY, Jessie,** Australian poet and prose writer. b. Cambridge, New Zealand, 15 Dec. 1864. She combined teaching with literary work and has been a voluminous contributor to the Australian press, with the readers of which she is a favorite. Among her published works are 'The Spirit of the Rangitira and Other Ballads' (1810); 'The Sitter on the Rail and Other Poems' (1891); 'The Bride of the Rivers.'

**MACKAY, John William,** American capitalist: b. Dublin, Ireland, 28 Nov. 1831; d. London, 20 July 1902. His parents brought him to New York in 1840, and he learned shipbuilding. He went to California as a miner in 1851, and afterward to Nevada, where he continued mining with great perseverance in the face of many disappointments. In 1872 he was one of the discoverers of the Bonanza mines of the Comstock Lode (q.v.), in which mines he obtained a two-fifths share and became very wealthy. He and his partners, Fair, Flood and O'Brien, founded the Bank of Nevada, of which Mackay was president for years. His relations with Jay Gould being unfriendly, in a spirit of opposition to him, and to the Western Union Telegraph Company, Mackay in 1884 joined with James Gordon Bennett in forming the Commercial Cable Company and the Postal Telegraph Company. He succeeded in laying two cables, overcoming great obstacles, and afterward won in a long rate-war with the old lines. The Roman Catholic Orphan Asylum at Virginia City, Nev., founded by him, is noteworthy among his many public benefactions.

**MACKAYE, ma-ki', James Steele,** American playwright: b. Buffalo, N. Y., 1844; d. Timpas, Colo., 25 Feb. 1894. In 1868 he went to Paris to study painting; but having there met Delsarte (q.v.) became interested in the latter's theories, and studied dramatic expression. In 1870-71 he gave in New York and Boston lectures on the art of expression. He opened the Saint James Theatre at New York in 1872, and appeared there in 'Monaldi,' adapted by himself from the French. In 1873-75 he was studying the drama in Paris and England, and at the Crystal Palace, London, he played the title-role in 'Hamlet.' His adaptation of Blum's 'Rose Michel' in 1872 ran for 122 nights at the Union Square Theatre, New York. He established in New York the Lyceum School of Acting, which later became the American Academy of Dramatic Arts. For several years he was manager of the Madison Square Theatre, and in 1885 built the Lyceum. Among his further plays were 'Won at Last'; 'Through the Dark'; 'Hazel Kirke'; 'A Fool's Errand'; 'In Spite of All'; 'Paul Kauvar.'

Consult Mackaye, Percy, 'Steele Mackaye: A Memoir' (New York 1911).

**MACKAYE, Percy,** American dramatist and poet: b. New York, 16 March 1875. He was graduated from Harvard in 1897 and studied at the University of Leipzig in 1899-1900. He engaged in European travel in 1898-1900, residing in Rome, Switzerland, Leipzig and London. He was an instructor in a private school in New York in 1900-04, after which time he joined the Cornish Colony in New Hampshire and devoted his time entirely to dramatic work. He has lectured on the theatre at Harvard, Yale, Columbia and other American universities, and is a member of the National Institute of Arts and Letters. He is a leading exponent of poetic dramatic art in America and handles both tragedy and comedy with grace and surety of touch. Author of 'The Canterbury Pilgrims,' a comedy, produced by the Coburn Players in the open air at Harvard, Yale and other universities in 1909-13, and given as a civic pageant in honor of President Taft at Gloucester, Mass., 4 Aug. 1909 (1903); 'A Modern Rendering into Prose of Chaucer's Tales' (1904); 'Fenris the Wolf,' a tragedy (1905); 'Jeanne d'Arc,' a tragedy, produced by Julia Marlowe and E. H. Sothern in America and England in 1906-07 (1906); 'Sappho and Phaon,' a tragedy (1907); 'The Scarecrow' (1908); 'Lincoln Centenary Ode' (1909); 'Mater,' an American comedy (1908); 'The Playhouse and the Play,' essays (1909); 'A Garland to Sylvia' (1910); 'Anti-Matrimony,' a satirical comedy produced and acted by Henrietta Crossman (1910); 'The Civic Theatre' (1912); 'Uriel and Other Poems' (1912); 'Beauty and the Beast,' a lyric drama (1912); 'Sanctuary, A Bird Masque,' produced for President Wilson at Meriden Bird Club Sanctuary, New Hampshire (1913); 'The Immigrants,' a lyric drama (1915); 'The Evergreen Masque' (1917); 'This Fine Pretty World'; 'The Sphinx' (1929).

**McKEAN, ma-kēn', Thomas,** American patriot and jurist, signer of the Declaration of Independence: b. New London, Chester County, Pa., 19 March 1734; d. Philadelphia, 24 June 1817. He was privately educated at Newcastle, Del.; having settled there, he studied law and was admitted to the bar in 1755, at once became register of probate and was soon made assistant attorney for Sussex County. With Cæsar Rodney (q.v.), in 1762, he entered upon a revision of Delaware laws up to 1752, and was chosen in the same year to the Delaware assembly, in which his membership continued till 1779. Elected in 1765 to the Stamp Act Congress, he took a strong position in defense of colonial rights and as judge of the Common Pleas in the same year permitted no stamped paper to be used in his court. About 1771 he began to practise law in Philadelphia, although retaining a Delaware residence, and from Delaware, in 1774, he was elected to the Continental Congress, in which he served nine years, including the entire period of the Revolution, and took a prominent part in its proceedings, being president of the Congress in 1781. He was not present at the signing of the Declaration of Independence, which he had advocated, but added his signature some years afterward. The

Articles of Confederation, which he aided in drafting, were also signed by him. In Pennsylvania, where he had become well known, he was made chairman of the Committee of Safety in 1776, and from 1777 to 1799 was chief justice of the State. He became a strong supporter of Jefferson, and a leader of the Republican party of that day, and was governor of Pennsylvania from 1779 to 1808. With James Wilson he wrote 'Commentaries on the Constitution of the United States' (1790).

**McKEAN**, Thomas, American philanthropist. b. Philadelphia, Pa., 23 Nov. 1842; d. there, 16 March 1898. In 1862 he was graduated at the University of Pennsylvania and entered upon a successful business career, becoming an officer in many railroad and financial corporations. He acquired a large fortune, which he spent freely in endowing educational and charitable enterprises, his various gifts to the University of Pennsylvania alone amounting to \$300,000.

**McKEES ROCKS**, Pa., borough in Allegheny County; on the navigable Ohio River, and Chartiers Creek; 4m. NW of Pittsburgh, served by the Pittsburgh and Lake Erie, Pittsburgh, Chartiers and Youghiogheny; and the Pittsburgh, Allegheny and McKees Rocks railroads. McKees Rocks is in a coal mining and farming section, but is essentially an industrial suburb of Pittsburgh, owing to the expansion of the two communities. Manufactures include bar iron and steel; automobile and locomotive parts; steel and wooden kegs; and enamelware. The borough was the site of a trading post in 1743, a fort in 1753; was named for Alexander McKee, who acquired the land and settled here about 1764; and was incorporated in 1830. Pop. (1940) 17,021.

**McKEESPORT**, Pa., city in Allegheny County; at the confluence of the navigable Monongahela and Youghiogheny rivers, and on their easterly banks, 15m. SE of Pittsburgh, served by the Pennsylvania; Baltimore and Ohio; and Pittsburgh and Lake Erie railroads. There are two airports. McKeesport is the second largest city in Allegheny County, ranking next to Pittsburgh, and is the retail center of a closely settled district, its neighboring towns including Clairton, East McKeesport, Glassport, Duquesne, Elizabeth, Wilmerding, Port Vue, and East Pittsburgh. Situated in the heart of the great Pennsylvania bituminous coal region, and the gas fields of that state and West Virginia, the city's industrial history is closely associated with the development of its natural resources. McKeesport is outstanding as one of the world's largest producers of steel pipes and tubes, a fact that has made it known to many by the sobriquet of the 'Tube City.' It has likewise important sheet steel and tin plate industries, and is the home of the first American manufacturers of stainless steel. Other products are shell and tool steel; steel castings; radiators and boilers; oxygen and acetylene gas; and there are meat packing plants and lumber manufactures. McKeesport is a well built city, laid out on ground rising somewhat steeply from the river-edge, and its attractiveness is enhanced by the numerous terraces that characterize its streets. There are many handsome buildings, and the newer residential section spreads advantageously upon the heights above the business and industrial districts. The city has excellent school

and park systems, and an exceptional number of churches. McKeesport was settled in 1755 by David McKee, a native of northern Ireland, who purchased a tract of 844 acres and from 1769 operated a ferry for which official authority was granted in 1775. The town was laid out in 1795 by John McKee, son of the original settler, 200 city lots being platted and sold. The infant town grew slowly, however, until about 1830, when the opening of the rich coal fields near by proved the start of its present high industrialization. Barge building was a considerable industry in the decades from 1830 to the 1850's, an abundance of timber supplying the busy river yards. McKeesport had its first iron works in 1851 and thereafter maintained a steady industrial expansion, passing the 20,000 population mark in 1890. A large number of the people are foreign born, the city having had successive waves of immigration, but the native born element predominates. McKeesport was incorporated as a borough in 1842, and was chartered as a city in 1890. Pop. (1940) 55,355.

**McKEEVER**, William Arch, American educator: b. Jackson County, Kan., 12 April 1868. He was graduated at the University of Kansas in 1898, and later studied at the University of Chicago and at Harvard. He was professor of philosophy at the Kansas State Agricultural College in 1900-13, and from 1913-20 was head of the department of child welfare at the University of Kansas. He then became director of the School of Psychology, Oklahoma City. He originated the 'Home Training Bulletins,' and the Juvenile Welfare Institute. His publications include: 'Psychology and the Higher Life' (1908); 'Psychologic Method in Teaching' (1909); 'The Pioneer, a Story of Kansas' (1911); 'Farm Boys and Girls' (1912); 'Training the Boy' (1913); 'Training the Girl' (1914); 'Outlines of Child Study' (1915); 'Man and the New Democracy' (1919); 'The Child and the Home' (1923); 'The Creative Mind' (1925); 'Side Stepping Divorce' (1927); 'You and Your Life' (1930); 'Living a Century' (1935); 'Campaign Against Old Age' (1937); 'Create Your Own Job' (1939).

**MacKELLAR**, Thomas, American poet: b. New York, 12 Aug. 1812; d. 29 Dec. 1899. Having learned the printer's trade in the publishing house of the Harpers, he went to Philadelphia and was employed in the type foundry of Lawrence Johnson and Co., in time became a partner in the business and finally its head, the new firm being styled MacKellar, Smiths and Jordan. Among his works may be mentioned 'Droppings from the Heart' (1844); 'Tam's Fortnight Ramble' (1847); 'The American Printer' (1866); 'Rhymes Atween-Times' (1873), and 'Hymns and Metrical Psalms' (1883).

**McKELWAY**, Saint Clair, American journalist: b. Columbia, Mo., 15 March 1845; d. 16 July 1915. In 1853 he came East and was educated in New Jersey, studied law and was admitted to the bar in New York in 1866, but never practised. In 1868 he became Washington correspondent for the New York *World* and the Brooklyn *Daily Eagle* and in 1870 a member of the editorial staff of the latter paper. From 1877 to 1884 he was the editor of the Albany *Argus*, and in the latter year returned to Brooklyn to become editor-in-chief of the *Eagle*,

which under his editorship maintained a high standard of excellence. He was a regent of the University of the State of New York since 1883, becoming vice-chancellor in 1900 and chancellor in 1913, a member of the historical societies of Long Island and Suffolk County, was director of the American Social Science Association and has lectured frequently on educational and political subjects.

**McKENDREE**, ma-kën'drī, **William**, American Methodist bishop: b. King William County, Va., 6 July 1757; d. near Nashville, Tenn., 5 March 1835. He served in the Continental army during the American Revolution, entered the Methodist ministry in 1787 and became a presiding elder nine years later. In 1801 he made a missionary tour beyond the Alleghenies and was an important factor in the evangelizing of that region. In 1808 he was elected bishop, being the first American-born person to hold that office in the Methodist Church. McKendree College (qv) was named in his honor. Consult 'Life' by Paine (1869).

**McKENDREE COLLEGE**, in Lebanon, Ill., founded in 1828 under the auspices of the Methodist Episcopal Church and first called Lebanon Seminary. In 1830 the name was changed, in honor of William McKendree, who gave his estate to the college. In 1839 a new charter was obtained whereby the school was granted university privileges. Abraham Lincoln rendered valuable services in securing the new charter. Students are admitted on certificates from approved schools or on examinations. It has classical, scientific, music, pre-law and pre-medical courses. Two main degrees are given: A.B. and B.S. In normal enrolment years it has approximately about 180 men and women in the regular session.

**McKENNA**, mā-kën'ā, **James Andrew Joseph**, Canadian public service commissioner: b. Charlottetown, Prince Edward Island, 1 Jan. 1862. He was educated at Saint Dunstan's College, Charlottetown, was associated for a time with the Prince Edward Island Railway and afterward engaged in journalism. In 1886 he entered the Indian Department of the Dominion Civil Service, and for a brief period was private secretary to Sir John A. Macdonald. With T. G. Rothwell he effected a settlement with British Columbia concerning the administration of the railway belt lands in 1897, and in 1899 he was a royal commissioner for the negotiation of a treaty with the Indians whereby the Peace River and Athabaska Country were surrendered to the Crown. He likewise secured the surrender by the Indians of the country around Buffalo Lake, Churchill River and Reindeer Lake in 1906. He was chairman of the royal commission which was appointed to adjust the claims of the half-breeds of the Northwest, and in 1901 was the sole commissioner. After 1909 he served as inspector of Indian Catholic schools in Manitoba, Keewatin and the Northwest provinces and territories. Author of 'Sir John Thompson' (1895), and 'The Hudson Bay Route' (1907). Died 30 May 1919.

**McKENNA**, **Joseph**, American jurist: b. Philadelphia, 10 Aug. 1843. In 1855 he went to California and was graduated from the Benicia Collegiate Institute in 1865, and admitted to the bar the same year. He was dis-

trict attorney of Solano County in 1866-68, and in the sessions of 1875 and 1876 served as a Republican in the lower house of the California legislature. In 1885-93 he was a California representative in the 49th, 50th, 51st and 52d Congresses, resigning from the House in 1893 to accept the appointment to the office of United States circuit judge in the Ninth Federal judicial district. This post he resigned to become Attorney-General in the cabinet of President McKinley in 1897. On 16 Dec. 1897 he was made an associate justice of the United States Supreme Court, took his seat, 26 Jan. 1898; retired, 5 Jan. 1925. He died 21 Nov. 1926.

**McKENNA**, **Reginald**, English statesman: b. London, 6 July 1863. He was educated at King's College, London, and at Trinity Hall, Cambridge, and became a barrister in 1887. He engaged in law practice until his election to Parliament for North Monmouthshire by the Liberal party in 1895. He soon acquired a reputation as one of the hardest workers on the Liberal benches as well as for a sound knowledge of national finance and of parliamentary procedure. In the cabinet of Sir Henry Campbell-Bannerman, formed in 1905, McKenna was appointed Financial Secretary under Chancellor of the Exchequer Asquith. In 1907 he received cabinet place as president of the Board of Education. He instituted medical inspection of the children in the schools, and reorganized the secondary school system. When the Asquith cabinet was organized in 1908 he was appointed First Lord of the Admiralty, and in 1911 he was transferred to the office of Home Secretary, where the problems incident to the crusades of the militant suffragettes caused him considerable difficulty. The so-called "Cat-and-Mouse Act" brought severe criticism from the supporters of the suffrage movement and from the Opposition. He was also prominently connected with the Welsh Church Bill, the Mental Deficiency Act and the affairs of the Administration of Criminal Justice. Upon the formation of the coalition cabinet under Asquith, in May 1915, McKenna became Chancellor of the Exchequer, succeeding Lloyd George, who was appointed to the new post of Minister of Munitions. McKenna introduced the first heavy war-tax measure and elicited high praise upon its brevity and lucidity as well as its careful distribution of the burdens of taxation. When the new coalition cabinet was organized under the premiership of Lloyd George, December 1916, McKenna was succeeded by Bonar Law. In the elections of 1918 he lost his re-election from North Monmouthshire, interrupting a continuous Parliamentary career of 23 years. In 1919 he abandoned politics and devoted the remainder of his life to banking, becoming chairman of the Midland Bank, one of the strongest financial institutions in England. In 1924 he served as a member of the so-called Dawes Plan Commission. He died at London, 6 Sept. 1943.

**MACKENSEN**, **August von**, German field-marshal: b. Hausleipnitz, Saxony, 1849. Entering the army in 1869 he served as lieutenant of reserves in the Franco-Prussian War. In 1876 he became adjutant of the first cavalry brigade and two years later was made lieutenant-colonel. He was appointed to the general staff in 1882 and in 1894 became commander of the Life Hussars.



Regiment and the following year was made aide-de-camp to the emperor. In 1914 he was made chief-of-staff under von Hindenburg on the Eastern Front and in 1915 he directed the German drive in the Balkans and was made field-marshal. He commanded the German right in the drive on Warsaw and forced the Russian evacuation of that city. In 1916 he subjugated Rumania in conjunction with von Falkenhayn. After the Armistice, he was interned by the French at Neusatz, where, over the protests of the Germans, he was kept until 1919.

**MACKENZIE**, ma-kěn'zī, **SIR Alexander**, Canadian explorer: b. Stornoway, Scotland, 1763; d. Mulhain, Perth, 12 March 1820. He went to Canada and in 1789 explored the great river named after him from the western end of Great Slave Lake to the Arctic Ocean, made another expedition to the western coast (1792), and was the first white man to cross the Rocky Mountains and reach the Pacific Coast. He returned to Britain in 1801, and was knighted in 1802. He published 'Voyages from Montreal through the Continent of North America to the Frozen and Pacific Oceans in 1789 and 1793' (1801).

**MACKENZIE**, **Alexander**, Canadian statesman. b. Logierait, Perthshire, Scotland, 28 Jan. 1822; d. Toronto, Ontario, 17 April 1892. He emigrated to Canada in 1842. For five years he worked at the trade of a stonemason at Kingston, but then removed to Sarnia, where he became a contractor. But his chief interests were political, not commercial. In 1852 he began the publication of the *Lambton Shield*, and soon became conspicuous as one of the Liberal leaders. He entered the Canadian Parliament in 1861, and after the Confederation of Canada, in 1867, sat both in the Ontario legislature at Toronto and in the Dominion Parliament at Ottawa. When Edward Blake (q.v.) became Prime Minister of Ontario in 1871 Mackenzie joined his cabinet and became Provincial Treasurer, but in consequence of the passing of a law forbidding membership of more than one legislature, he elected in 1872 to sit in the Dominion Parliament. In 1873, when the government of Sir John Macdonald was overthrown, Mackenzie, now the leader of the Liberal party, became Prime Minister of Canada and held office for five years. His too great devotion to the details of his office broke down his health. In 1878 his government was defeated by the advocates of protection, and in 1880 he was obliged by ill-health to hand over the leadership of the Liberal party to Mr. Blake.

**MACKENZIE**, **SIR Alexander Campbell**, Scottish composer: b. Edinburgh, 22 Aug. 1847. He received his musical education at Sondershausen, Germany, and at the Royal Academy of Music, London, where he won the King's Scholarship in 1862. He established himself as a teacher in Edinburgh in 1865 and soon became known as a violinist of merit. He became precentor of Saint George's Church in 1870 and was appointed conductor of the Scottish Vocal Music Association in 1873. He was a member of the orchestra at the Birmingham Festivals in 1864-73. He had composed several notable pieces for the piano at this time, and at the solicitation of friends he abandoned his work as a teacher and settled in Florence where he spent the greater share of his time from 1875

to 1885 engaged in composition. From 1888 he was principal of the Royal Academy of Music. He conducted the Philharmonic concerts in 1892-99, and was knighted in 1894. Author of 'Overture, Cervantes'; the cantatas 'The Bride' (1881) and 'Jason' (1882); the operas 'Colombo' (1883); 'The Troubadour' (1886); the oratorios 'The Rose of Sharon' (1884); 'Bethlehem' (1894); incidental music for several plays among them 'The Little Minister,' 'Coriolanus' and 'Ravenswood,' and many concertos, songs, violin pieces and works for violin and orchestra. Died 28 April 1935.

**MACKENZIE**, **Alexander Slidell** (originally Slidell), American naval officer: b. New York, 6 April 1803; d. Tarrytown, N. Y., 13 Sept. 1848. He was a brother of John Slidell (q.v.) and assumed the name "Mackenzie" for an uncle in 1837. He entered the navy in 1815 and became a commander in 1841. While in command of the *Somers* the next year a mutiny among the naval apprentices on board was supposed to have been detected, and three of them, including a son of the Secretary of War, were hung from the yardarm on 1 Dec. 1842. He was a popular writer and among his works are 'A Year in Spain by a Young American' (1829-31; enlarged ed., 1836), which attained great popularity in England and the United States; 'Popular Essays on Naval Subjects' (1833); 'The American in England' (1835); 'Life of John Paul Jones' (1841), etc. Consult 'The Case of the Somers; Defense of A. S. Mackenzie' (New York 1843); Cooper, 'The Cruise of the Somers' (ib. 1844).

**MACKENZIE**, **Arthur Stanley**, Canadian educator: b. Pictou, Nova Scotia, 26 Sept. 1865. He was graduated at Dalhousie University in 1885, and in 1885-87 was assistant master at the Yarmouth Academy, Nova Scotia. He was scholar in physics at Johns Hopkins University in 1889-90 and Fellow there in 1890-91. He was connected with the staff of physics at Bryn Mawr College in 1891-1905, was professor of physics at Dalhousie University in 1905-10 and at Stevens Institute of Technology in 1910-11, after which he was president of Dalhousie University. Author of 'The Laws of Gravitation' (1900). Died Halifax, 2 Oct. 1938.

**MACKENZIE**, **Charles Frederick**, Anglican bishop: b. Portmore, Peeblesshire, Scotland, 10 April 1825; d. Malo, in the Manganja country, Africa, 31 Jan. 1862. He was graduated at Cambridge in 1848, was elected a Fellow there and was ordained a deacon in 1851. He was appointed to a curacy at Haslingfield, Cambridgeshire, in 1851, which office he filled without discontinuing his work as Fellow and tutor at Cambridge. In December 1854 he accompanied Bishop Colenzo to Natal as his arch-deacon, and returned to England after a severe illness in 1859. He became the head of the Universities' Mission to Central Africa in 1860 and in 1861 was consecrated bishop of Central Africa. He was assisted by Livingstone in penetrating certain remote districts in his diocese. He died of a fever while on his way to a conference with the explorer. Consult Goodwin, 'Memoir of Bishop Mackenzie' (2d ed., 1865); Livingstone, 'Narrative of an Expedition to the Zambezi' (pp. 348-364, 400, 410-412, 1865).

**MACKENZIE, Compton**, English novelist and playwright. b. West Hartlepool, 17 Jan. 1883. He was educated at Saint Paul's School and Magdalen College, Oxford, where he took the second class in modern history in 1904. He was one of the founders of the Oxford *Point of View*, and was its editor from 1902 to 1904. He has since occupied himself in writing novels and plays. He holds a commission as a lieutenant in Royal Marines. His chief publications are 'The Passionate Elopement' (1911); 'Carnival' (1912); 'Guy and Pauline' (1915); 'Poor Relations' (1919); 'The Seven Ages of Woman' (1922); 'The Heavenly Ladder' (1924); 'The Old Men of the Sea' (1924); 'Coral' (1925); 'Fairy Gold' (1926); 'Rogues and Vagabonds' (1926); 'Dreams to Sell' (1930).

**MACKENZIE, Sir George**, Scottish lawyer: b. Dundee, 1636, d. Westminster, 8 May 1691. He was a grandson of Kenneth, 1st Lord Mackenzie of Kintail, and a nephew of the 1st and 2d Earls of Seaforth. He was educated at the universities of Saint Andrew's and Aberdeen and later studied civil law at the University of Bourges, France. He was called to the bar in Scotland in 1659 and speedily rose to distinction. In 1661 he conducted the defense for the Marquis of Argyll in his trial for high treason, and soon afterward was appointed a justice-depute, or judge of the Criminal Court. In 1669 he sat for Ross-shire and rendered himself conspicuous by his opposition to Lauderdale and by his support of popular measures. He was knighted in 1674 and in 1677 succeeded Sir John Nisbet as King's Advocate. From this time Mackenzie's principles seemed wholly subverted, and in his endeavor to force submission to the king he earned for himself the appellations "Bloody Mackenzie" and "the blood-thirsty advocate." He opposed the abrogation of the penal laws against Catholics in 1686 and was removed from office until 1688, when for a year he was again King's Advocate, relinquishing the office at the outbreak of the Revolution. He founded the Advocate's Library at Edinburgh in 1689, and in 1690 he retired to Oxford where he was admitted as a student and spent the remainder of his life engaged in literary pursuits. Author of 'A Vindication of the Government of Charles II' (1691); 'The Moral History of Frugality' (1691); 'Methods of Proceeding against Criminals and Fanatical Covenanters' (1691); 'Vindication of the Presbyterians of Scotland from the Malicious Aspersions Cast upon Them' (1692), and many other works of earlier date. His collected works were published (2 vols, Edinburgh 1716-22).

**MACKENZIE, George Henry**, American chess player: b. near Aberdeen, Scotland, 24 March 1837; d. New York, 13 or 14 April 1891. He was appointed an ensign in the 60th Rifles in 1856, served at the Cape of Good Hope and in India and was promoted lieutenant. He returned to England and in 1861 sold his commission. He came to the United States in 1863, joined the Federal army and rose to the rank of captain. He thereafter devoted himself to chess as a professional, already having won first prize in the London Tournament of 1862, defeating the Prussian champion, Anderson. Settling in New York in 1865 he became a member of its chess club and won first prize in

the tournaments of 1865, 1866, 1867, 1868. He won first prize at the Second American Chess Congress in Cleveland in 1871; fourth prize at the International Congress at Paris in 1878, and in 1887 he won the championship of the world at Frankfort. He was found dead in bed.

**MACKENZIE, Henry**, Scottish novelist and essayist: b. Edinburgh, 25 Aug. 1745; d. there, 14 Jan. 1831. He was a lawyer at Edinburgh, and in 1771 published anonymously 'The Man of Feeling,' which the booksellers had declined as a gratuitous offering, and which gained him a conspicuous place among 18th century writers. Other novels of his are 'Man of the World' (1773), and 'Julia de Roubigné' (1777). He edited *The Mirror*, 1779-80 (the first Scottish paper founded on the plan of *The Spectator*), and *The Lounger*, 1785-87.

**MACKENZIE, James Cameron**, American educator: b. Aberdeen, Scotland, 15 Aug. 1852. He was graduated at Princeton Theological Seminary in 1882 and was ordained in the Presbyterian ministry in 1885. He founded the Harry Hillman Academy, Wilkes-Barre, Pa., in 1882, and also organized the Lawrenceville (N. J.) School in that year, acting as its head master in 1882-99. In 1899 he reorganized the Jacob Tome Institute, Fort Deposit, Md., and was its director until 1901. In 1901-26 he was director of the Mackenzie School, Monroe, N. Y., and after that engaged in literary work. D. 10 May 1931.

**MACKENZIE, John Joseph**, Canadian pathologist and bacteriologist: b. Saint Thomas, province of Quebec, 1865; d. 1 Aug. 1922. He was educated at the universities of Toronto, Leipzig and Berlin. He was a Fellow in biology at Toronto and later was bacteriologist to the Ontario Provincial Board of Health. After 1900 he was professor of pathology and bacteriology at the University of Toronto. He contributed to various scientific magazines. He was a Fellow of the Royal Society of Canada, and member of the American Public Health Association, the Society of American Bacteriologists and of the American Association of Pathologists and Bacteriologists. He was secretary of the Canadian Institute. During the European War he was attached to No. 4 Canadian General Hospital. Author of 'Recent Theories in regard to the Causes of Immunity to Infectious Disease' (1907).

**MACKENZIE, John Stuart**, British educator: b. near Glasgow, 21 Feb. 1860. He was educated at Glasgow and Cambridge universities and later studied at the University of Berlin. He was a Fellow at the University of Glasgow in 1882-84, at the University of Edinburgh in 1884-89 and at Trinity College, Cambridge, 1890-96. He was professor of logic and philosophy at the University College of South Wales and Monmouthshire in 1895-1915, then becoming professor emeritus. He was a vice-president of the Institut International de Sociologie in 1911 and president of the Moral Education League in 1908-16. Besides magazine articles and contributions to the 'Encyclopedia of Religion and Ethics' he is author of 'An Introduction to Social Philosophy' (1890; 2d ed., 1895); 'A Manual of Ethics' (1893; 8th ed., 1915); 'Outlines of Metaphysics' (1902; 2d ed., 1906); 'Elements of Constructive Philosophy' (1917); 'Ultimate Values' (1924).

**MACKENZIE, Sir Morell**, English laryngologist: b. Leytonstone, Essex, 7 July 1837; d. London, 3 Feb 1892. He was educated at the London Hospital, Paris and Vienna. In 1859 he met Czermak in Budapest and learning from him the use of the laryngoscope he introduced its use into London. Later he became physician to the London Hospital and lecturer on diseases of the throat. In 1863 he founded the Throat Hospital in London. In 1887-88 he was associated with specialists of Berlin and Vienna in the treatment of the larynx disease of the Crown Prince, subsequently Emperor Frederick of Germany, and for these services was knighted by Queen Victoria and received the Grand Cross and Star of the Hohenzollern Order of Germany. He was the author of 'The Use of the Laryngoscope' (1866); 'Diseases of the Throat and Nose' (1880), etc.

**MACKENZIE, Ranald Slidell**, American soldier: b. New York City, 27 July 1840; d. Staten Island, N. Y., 19 Jan 1889. He was son of Alexander S. Mackenzie (q.v.). Graduated from West Point in 1862, he was assigned to the engineer corps, was wounded at Manassas and brevetted 1st lieutenant for services in that action. He was engineer of Sumner's division at Fredericksburg (13 Dec. 1862), and received the successive brevets of captain and major for his conduct at Chancellorsville and Gettysburg. Promoted captain of engineers 6 Nov 1863, he took part in the Richmond campaign as commander of 2d Connecticut Artillery. On 18 June 1864 was brevetted lieutenant-colonel and commanded the 2d Connecticut Heavy Artillery in the Shenandoah campaign. Present at Appomattox (9 April 1865), mustered out of the volunteer service 15 Jan. 1866. After the Civil War he commanded important army posts in the Southwest, and was notably successful in settling Indian troubles on the Rio Grande. Made brigadier-general 1882, retired for disabilities 1884.

**McKENZIE, Robert Tait**, American sculptor, educator and physician: b. Almonte, Ont., Canada, 1867; d. Philadelphia, Pa., 28 April 1938. He was graduated at McGill University in 1889 and took his M.D. there in 1892. He engaged in the practice of medicine; was connected with the medical faculty of McGill in 1895-1904, and in 1904 was appointed professor and director of the department of physical education at the University of Pennsylvania. He was appointed temporary major in the R. A. M. C. in 1915, and in 1916 was inspector of physical training of Kitchener's armies, and medical officer in charge of Heaton Park Command Depot. He was a fellow of the College of Physicians at Philadelphia, and in 1912-15 he was president of the American Physical Education Association. His fame as a sculptor was achieved without artistic training, his guide being his thorough knowledge of anatomy and his unusual ability in interpretation. He exhibited at the Society of American Artists, New York; the Royal Academy, London, and the Paris Salon. Among his works as a sculptor are 'The Sprinter' (Fitzwilliam Museum, Cambridge); 'The Athlete' (Ashmolean Museum, Oxford); the statues, 'The Competitor' and the 'Juggler' (Metropolitan Museum, New York); 'The Youth Benjamin Franklin' (University of Pennsylvania). Author of 'The Barnjum Barbell Drill,' 'Exercise in Education and Medicine,' 'Reclaiming the Maimed.'

**MACKENZIE, Sir William**, Canadian financier: b. Kirksfield, Ontario, 30 Oct. 1849; d. Toronto, 5 Dec. 1923. He was educated at the local schools and became a public school teacher. Giving up this occupation he contracted for the construction of a portion of the Victoria Railway—now the Midland division of the Grand Trunk Railway—and later executed contracts for the Cobocork, the Credit Valley, the Canadian Pacific, the Fort McLeod and Edmonton, the Regina, the Hudson Bay and Dauphin railways and other roads. He controlled and was president of the Toronto Street Railway, was also interested in the Montreal and Winnipeg street railways, and with others controlled the Birmingham Street Railway and other European lines. His great achievement was the construction of the Canadian Northern Railway. He was knighted in 1911.

**MACKENZIE, William Douglas**, American Congregational clergyman: b. Fauresmith, Orange River Colony, South Africa, 16 July 1859. He graduated from Edinburgh University in 1881, studied divinity in Edinburgh and Gottingen, was professor of theology in the Chicago Theological Seminary, 1895-1903, and since 1903 has been president of Hartford Theological Seminary. He published 'The Revelation of the Christ' (1896); 'Christianity and the Progress of Man' (1897); 'South Africa: its History, Heroes and Wars' (1900); 'John Mackenzie, South African Missionary and Statesman' (1902); 'The Final Faith' (1910); 'Galatians and Romans' (1912); 'Christian Ethics in the World War' (1918).

**MACKENZIE, William Lyon**, Canadian journalist and political reformer: b. Dundee, Scotland, 12 March 1795; d. Toronto, Ontario, 28 Aug. 1861. In 1820 he came to Canada and conducted a drug and book store at Little York (now Toronto), and later at Queenstown, where in 1824-26 he published the *Colonial Advocate*. He transferred the *Advocate* office to Toronto in 1826, and there continued the paper until 1833, attacking the office-holding class and demanding governmental reforms. In 1828 he entered the provincial Parliament; and having been expelled for alleged libel against that assembly, was five times re-elected and as often re-expelled, until the government refused to issue another writ of election. In 1832 he went to England, and having presented to the home government a petition of grievances from the Canadian reformers, was successful in obtaining the dismissal of the attorney-general and the solicitor-general of Upper Canada and the veto of the Upper Canadian bank bill. In 1834 he was elected first mayor of Toronto, in 1836 began the publication of *The Constitution*, and, in 1837 published in that journal a bold manifesto which was practically a declaration of independence of the provincial government. Soon afterward he was the moving spirit in armed rebellion. An encounter took place between his followers and the government forces at Montgomery's Tavern, in the vicinity of Toronto (7 Dec 1837), and the insurgents fled to Navy Island in the Niagara, where they were joined by about 500 Americans. The island was bombarded by Canadian troops, and as a result of this and the strong opposition of General Scott of the United States army, the insurgents broke camp and Mackenzie was im-

prisoned for a year in Rochester jail. Later he was a journalist in the United States, in 1849 took advantage of amnesty to return to Canada, was there a member of Parliament from 1850-53, and at Toronto published the weekly *Mackenzie's Messenger* from 1858 until shortly before his death. The reforms for which he so persistently contended were in the main achieved in his lifetime. He wrote 'Sketches of Canada and the United States' (1833). Consult the 'Life' by Lindsey (1862), Lindsey's 'Life' in 'The Makers of Canada' (1910); Dent, 'Story of the Upper Canada Rebellion' (1885); Read, 'The Canadian Rebellion of 1837' (1896).

**MACKENZIE**, Canada, a district in the Northwest Territories, bounded north by the Arctic Ocean, east by Keewatin, south by Athabasca, and separated on the west from Yukon by the northernmost spur of the Rocky Mountains. The district created in 1895 and administered by the government of the Northwest Territories, is the largest in Canada, having an estimated area of 527,490 square miles, of which 34,265 squares miles are water. The surface generally is diversified; in the northwest it is a sterile waste; along the river valleys and on the western mountain slopes it is well forested with fir, pine, spruce and other northern trees, while coal and other minerals, although unexploited, are found. The principal lakes are Great Slave, Great Bear, Pelly and Clinton Colden. The chief rivers are the Mackenzie, the Coppermine and the Great Fish or Back River. The soil is comparatively unproductive, the climate being arctic and inhospitable except for the few summer months. The population, about 5,400, inhabit the trading settlements of the Hudson's Bay Company's along the Mackenzie and its tributaries. The pelts of the fur-bearing animals of the region are practically the only developed item of commerce.

**MACKENZIE RIVER**, Canada, a large river in the Northwest Territories, which flows from the Great Slave Lake, and after a north-westerly course of about 1,000 miles enters the Arctic Ocean by numerous mouths at the island-studded Mackenzie Bay. Its ultimate source is in Thutage Lake, the headwaters of the Finlay in northern British Columbia; its total length from Thutage Lake to the sea is 2,525 miles. Its tributary head-streams are the Great Peace River, which rises in British Columbia beyond the Rocky Mountains, and the Athabasca or Elk River, which has its source in the Rockies; these two rivers flowing into Lake Athabasca are discharged by the Great Slave River into Great Slave Lake whence issues the Mackenzie. The principal affluent of the Mackenzie is the Laird or Mountain River. With the exception of a slight obstruction in the rapids near Fort Good Hope, in lat. 66° N., the Mackenzie and its tributaries are navigable for a distance of over 1,800 miles, and from June to October steamboats of the Hudson's Bay Company ply from Great Slave Lake almost to the Arctic Ocean. Forts Providence, Norman and Good Hope are trading stations along its banks, while Forts McPherson, Franklin, Enterprise, Reliance, Resolution, Chipewyan, Nelson and Graham are along its tributaries. The valley is well-wooded with spruce,

pine, poplar and birch, while coal, salt and other minerals abound in the region. The river is named after Alexander Mackenzie (q.v.), who first explored it in 1789.

**MACKEREL**, māk'e-rēl. The common mackerel (*Scomber scombrus*) is the best-known and most important member of the family *Scombridae* and one of the most valuable of food-fishes, ranking in this respect behind the cod and herrings only. The mackerel is a compactly built fish of smooth and regular outline, the fusiform figure tapering accurately to the pointed snout, so that it cleaves the water easily. The large, deeply-forked tail is supported on a slender peduncle, provided with two small keels on each side, and preceded by a dorsal and a ventral series of finlets of five each. A soft dorsal and a counterpart anal fin are placed exactly opposite each other and behind the level of the vent, and the anterior dorsal fin is supported by usually 11 delicate spines. Very numerous and small scales cover the body nearly uniformly, but are absent from the head. The large mouth is provided with numerous small sharp teeth. The gill-rakers are long and the air-bladder is wanting. The color of the back is deep blue, marked by about 35 nearly vertical wavy black lines; below, the fish is silvery white. A recent close study of the species on the European side of the Atlantic establishes the existence there of local races, as in the herring, but it appears that the American representatives, while constituting a race distinct from the European, are more homogeneous.

The mackerel is an abundant fish on both sides of the north Atlantic, on the American side ranging from Cape Hatteras to the Straits of Belle Isle, and on the European from northern Norway to the Canary Islands and throughout the Mediterranean. While a true pelagic fish of wandering and migratory habits and, like most such, capricious in its movements, the great body of mackerel approaches the American coast and moves along it northward as the temperature of the water rises to about 45° F. On the approach of winter they retire to a greater distance from the land, but a few remain throughout the year near the coast. Mackerel swim in great schools at or near the surface; one such covering an area of 10 square miles, and another estimated as containing 1,000,000 barrels, have been observed. The local movements of the schools are largely regulated by the food-supply, which consists of small pelagic fishes, various kinds of small crustaceans, etc., which are pursued with great eagerness. On the other hand, the bluefish and other carnivorous fishes, porpoises, squids and fish-eating birds, are relentless enemies. Spawning takes place in the open sea, not far from the coast from Vineyard Sound to the Gulf of Saint Lawrence, and during the months of May, June and early July. The eggs are about one millimeter in diameter, contain an oil-drop and float at the surface, where the young fish develop and live. They grow rapidly and are about five inches long by the end of the first half year, when they are known as "spikes"; "blinkers" are about one year old and six or seven inches long; "tinkers" are seven to nine inches long and are supposed to be two years old. At the age of three or four

years the mackerel is mature and from 12 to 18 inches long. The very largest specimens weigh about four pounds and have a length of 22 to 23 inches.

The mackerel fishery is of the greatest importance in the New England States and Nova Scotia, and in Norway, Ireland and Great Britain. In Europe the fishery is prosecuted almost exclusively by means of small boats and hand lines, but in America is chiefly carried on in staunch sea-going schooners, most of which hail from Gloucester, Mass, and which are equipped with purse seines, by means of which entire schools are surrounded and captured. The fishing begins off Cape Hatteras in March or April and the schools are followed northward as they appear successively on the New Jersey, New England and Canadian coasts. In addition to the operations of this mackerel fleet, local fisheries are carried on along much of the coast, with pound-nets, gill-nets and hand-lines. The spring and local catches are generally sold fresh, the summer catch being split and salted. The product of the fishery has been peculiarly subject to fluctuations, due in large part to alternating periods of abundance and scarcity of the fish. Colonial writers refer to its great plenty, and statistics of the catch inspected in Massachusetts show a somewhat regular recurrence of such periods at intervals of about 20 years. From 350,000 barrels in 1880 and 395,000 in 1881, the catch steadily declined to 75,000 in 1886, and 18,000 in 1891, since which time it has greatly fluctuated.

The total weight of the mackerel landed in Boston and Gloucester in 1929 was 35,744,000 pounds a great increase over the catch of 1928 which was 23,517,000 pounds. Of the 1929 total, 21,264,000 pounds were landed at Boston, and 14,480,000 pounds at Gloucester. In addition there were landed at Portland, Me., in the same year 2,000,000 pounds. The total value of the mackerel landed at all three ports in 1929 was \$1,382,400, compared with a value of \$1,353,900 for the catch of 1928. The output of mackerel fry in 1929 was 2,778,000. The mackerel production of the Canadian provinces in 1928 was 123,768 hundredweight as compared with 158,797 hundredweight in 1927; and 251,478 hundredweight in 1922. The catch of 1928 was valued at \$528,267; that of 1922 at \$1,500,357.

An elaborate account of the American mackerel fishery will be found in Brown-Goodé's 'Materials for a History of the Mackerel Fishery' (Report of the United States Fish Commission, 1884); for some recent views see Moore, 'Report National Fishery Congress' (Washington 1898); and for methods of preservation, Stevenson, 'The Preservation of Fishery Products for Food' (Bulletin of United States Fish Commission, 1898).

**MACKEREL SHARK, or PORBEAGLE**, a shark of the family *Lamnidae*, allied to the man-eater (q.v.), and like it sometimes called blue shark, on account of its color, which is frequently seen on both sides of the northern Atlantic Ocean; it is the *Lamna cornubica* of ichthyologists. The ordinary length is about 10 feet, and they become very abundant in summer, when the mackerel are running, along the New England coast, and also about Great Britain, where they are called porbeagles. They are a nuisance to fishermen by destroying

their nets, through which several will often tear their way (for they roam about in bands) in pursuit of captured fish. Formerly considerable quantities of oil were saved from their livers, but at present the value of this commodity does not pay for the trouble of taking them.

**MACKEY, Albert Gallatin**, American writer on Freemasonry: b. Charleston, S. C., 12 March 1807; d. Fortress Monroe, Va., 20 June 1881. He was graduated from the Medical College of South Carolina in 1832 and was demonstrator of anatomy there in 1838, but after 1844 devoted himself to studies of Freemasonry and became a standard authority on the subject. Among his works are 'A Lexicon of Freemasonry' (1845); 'The Mystic Tie' (1849); 'Book of the Chapter' (1858); 'A Manual of the Lodge' (1862); 'A Textbook of Masonic Jurisprudence' (1869); 'Encyclopædia of Freemasonry' (1874).

**McKIBBEN, Chambers**, American soldier: b. Pittsburgh, Pa., 2 Nov. 1841; d. May 1919. He enlisted as a private in the volunteer service 22 Sept. 1862, was brevetted captain for gallant services in the battle of North Anna River (Va.) and in the operations on the Weldon Railway, and on 1 May 1896 attained the rank of lieutenant-colonel of the 21st United States Infantry. At the beginning of the war with Spain he went to Cuba with Shafter's army, fought at Santiago (1 July 1898), and was made brigadier-general of volunteers and appointed military governor of Santiago. On 12 May 1899 he was mustered out of the volunteer service. Retiring in the same year, he was put in command of the Department of Texas, and two years later was transferred to the command of an infantry regiment. In 1902 he retired with the rank of brigadier-general.

**McKIM, Charles Follen**, American architect: b. Chester County, Pa., 24 Aug. 1847; d. 14 Sept. 1909. He was son of James Miller McKim, a Presbyterian minister who was an abolitionist. He studied at the Lawrence Scientific School in 1866, at the Beaux-Arts of Paris in 1867-70, and shortly afterward entered into partnership with Stanford White and William R. Meade. This firm achieved some of the finest triumphs of recent American architecture. Among notable examples of its work are the buildings of Columbia University, and the Public Library of Boston. In 1903 McKim received the royal gold medal from the Royal Institute of British Architects in recognition of his services to architecture. He was the second American to obtain this honor, R. M. Hunt (q.v.) having been the first. On the occasion of the presentation he made an able speech reviewing the progress of his profession in the United States. He was elected president of the American Institute of Architects.

**McKIM, James Miller**, American abolitionist: b. near Carlisle, Pa., 14 Nov. 1810; d. Llewellyn Park, West Orange, N. J., 13 June 1874. He was graduated from Dickinson College (Carlisle, Pa.) in 1828, studied medicine at the University of Pennsylvania and theology at Princeton (1831) and Andover (1832), and in 1835 was ordained a Presbyterian pastor in Womelsdorf, Pa. An original member of the American Anti-Slavery Society, he became its



lecturing agent in October 1836, and spoke throughout Pennsylvania, often at great personal danger. In 1840 he removed to Philadelphia, where he was publishing agent of the Pennsylvania Anti-Slavery Society and later corresponding secretary until 1862. In November 1862 he called a public meeting in Philadelphia to provide for 10,000 slaves suddenly liberated by the capture of Port Royal, S. C. As a result, the Philadelphia Port Royal Relief Committee was formed. This committee was expanded in November 1863 into the Pennsylvania Freedman's Relief Association, of which McKim became the corresponding secretary. In that capacity he was active in the establishment of negro schools in the South. In 1865-69 he was corresponding secretary of the American Freedman's Commission, which on his motion was disbanded in July 1869. In 1865 he assisted in founding and became a proprietor of the New York weekly *Nation*. During the Civil War he was an advocate of the enlistment of negro troops, and as a member of the Union League of Philadelphia assisted in the recruiting of 11 colored regiments.

**MACKINAC** (măk'i-năk or măk'i-nây) ISLAND, Mich., in Mackinac County, alt., 596 feet, at the entrance to the Straits of Mackinac in Lake Huron. It lies 25m. NW. of Detroit. The island is three miles long, and two miles wide. It came into prominence when the early missionaries and explorers realized its strategic value. It has steamboat connections with lake ports. It has a D. A. R. library, a historical museum, and an emergency hospital. Among local points of interest are the John Jacob Astor house, old forts, and a «most historic spot of Michigan» monument. The name is a shortened form of the Indian *Michilmackinac*, meaning «great turtle» Pop. (1930) 566, (1940) 508.

**MACKINDER**, ma-kin'der, Halford John, English author and educator. b. Gainsborough, 15 Feb. 1861. He was educated at Christ Church, Oxford; in 1883 was president of the Oxford Union; Burdett-Coutts University scholar 1884; barrister, Inner Temple 1886; reader in geography, Oxford University 1887-1905; and from 1903-08 director of the London School of Economics and Political Science. He was leader of the Mount Kenya Expedition 1899; and was member (Unionist) for the Camlachie division of Glasgow 1910-22. He has served on many important commissions and has written 'The Rhine' (1908); 'Elementary Studies in Geography' (12th ed, 1914); 'Democratic Ideals and Reality' (1919).

**McKINLEY**, ma-kin'li, William, American statesman, 24th President of the United States: b. Niles, Trumbull County, Ohio, 29 Jan. 1843; d. Buffalo, N. Y., 14 Sept. 1901. He was educated at Union Seminary, Poland, Mahoning County, Ohio, and Allegheny College, Meadville, Pa. (1860-61). Forced by illness to discontinue his college course, he taught in the public schools, was a clerk in the Poland post-office and on 11 June 1861 enlisted for the Civil War as a private in Company E of the 23d Ohio Volunteer Infantry. His first battle was that of Carnifex Ferry (10 Sept 1861), and on 15 April 1862, while in camp at Fayetteville, western Virginia, he was promoted commissary sergeant. For conspicuous service at Antietam (17 Sept 1862) he was made second

lieutenant of Company D. His subsequent appointments were, first lieutenant, Company E (7 Feb 1863); captain Company G (25 July 1864); and brevet major (14 March 1865). When mustered out on 26 July 1865 he was acting assistant adjutant-general on the staff of Gen. S. C. Carroll, commanding the veteran reserve corps stationed at Washington. Among other actions in which he participated were those of South Mountain (14 Sept 1862), Lexington (10 June 1864), Kernstown (24 July 1864), Opequan Creek (Winchester, 19 Sept. 1864), Fisher's Hill (22 Sept 1864) and Cedar Creek (19 Oct 1864). During his subsequent political career he was generally known, especially in Ohio, as Major McKinley. At the close of the war he began the study of law at Youngstown, Ohio (1865-66), continued it at the Albany (N. Y.) Law School (1866-67), in March 1867 was admitted to the bar at Warren, Trumbull County, Ohio, and at once entered practice at Canton. In 1870-71 he was prosecuting attorney of Stark County, and during the campaign between R. B. Hayes and William Allen for the governorship of the State, spoke effectively against the «greenback» craze. He was elected to Congress as Republican representative from the 17th Ohio district in 1877, and served continually in the 45th, 46th and 47th Congresses (1877-83). It was asserted by the Republicans that he was elected in 1882 to the 48th Congress by a majority of eight ballots; but, although he had received the certificate of election, his seat was successfully contested by J. H. Wallace, who was not, however, seated until June 1884. He represented the 20th district in the 49th Congress (1885-87), and the 18th in the 50th and 51st Congresses; but in 1890 was defeated in the 16th for the 52d Congress by 300 ballots by J. G. Warwick, Democrat, lieutenant-governor of the State a short time previously. His defeat was attributed to the gerrymandering of the district by a Democratic legislature. His service in Congress was notable. In 1877 he was appointed a member of the Judiciary Committee, and in December 1880 of the Ways and Means Committee to succeed James A. Garfield; and in 1881 was chairman of the committee in charge of the Garfield memorial exercises in the House. In 1889-90 he was chairman of the Ways and Means Committee. He was a candidate for speaker of the 51st Congress, but was defeated by T. B. Reed on the third ballot in the Republican caucus. He was known among the foremost orators of the House; and his speeches on arbitration as a solution of labor troubles (2 April 1886) and in support of the civil service laws (24 April 1890) were most favorably received. But his principal efforts were made in connection with the tariff, which, from his first appearance in the House, was the chief object of his study. On 6 April 1882 he spoke in advocacy of protection; on 30 April 1884 in opposition to the Morrison tariff bill, making what was esteemed the ablest argument against that measure; and on 7 May 1890 in support of the general tariff bill, now known by his name, which, as chairman of the Ways and Means Committee, he had introduced before the House on 16 April. The bill was passed by the House on 21 May, by the Senate on 11 September, and on 6 October became a law. His bill obtained for him an international reputation, and

eventually the Presidency. In 1884 he was delegate-at-large from Ohio to the Republican National Convention at Chicago, where he supported Blaine's candidacy, and where, as chairman of the committee on resolutions, he helped to determine the platform of his party, which he read before the convention. In the Republican National Convention at Chicago in 1888, he was again a delegate and chairman of the committee on resolutions. He supported the candidacy of John Sherman, although, when it was finally learned that Blaine would decline the nomination, he was himself the choice of many delegates and was strongly urged to permit the use of his name. At the Minneapolis convention of 1892 he was once more a delegate and was elected permanent chairman of the assembly. He supported the renomination of President Harrison, and though refusing the use of his own name, received the ballots of 182 delegates. He then left the chair and moved to make Harrison's nomination unanimous, which was accordingly done. In the ensuing campaign he took a very active part, traveling, it was estimated, more than 16,000 miles and speaking to more than 2,000,000 voters. In 1892-96 he was governor of Ohio, having been elected in 1891 by 21,500 plurality, and in 1893 by the unusual plurality of 80,995. Labor riots occurred during his administration, necessitating the placing of 3,000 militia troops in active service, but the difficulties were successfully adjusted. McKinley also personally directed the relief work for the starving miners of the Hocking Valley district. He was nominated for the Presidency by the Republican National Convention which met at Saint Louis 16 June 1896, and was elected by a plurality of 601,854 over W. J. Bryan, receiving a popular vote of 7,104,779, and in the electoral college a vote of 271 to 176 for Bryan. Throughout the campaign he remained in Canton, where he made over 300 speeches to more than 750,000 visitors. Under his administration decided increase in business prosperity followed the passage of the Dingley tariff measure. The most important event of his term was the Spanish-American War (q.v.), which he had believed might be prevented and had done all in his power to avert. When hostilities broke out on the part of certain inhabitants of the Philippine Islands, the President appointed a commission to study the situation and report on the most suitable mode of government for the new territory. On 7 July 1898 he approved the joint resolution of Congress for the annexation of the Hawaiian Islands, and in 1898 he also selected a delegation to represent the United States in The Hague peace conference which convened in May 1899. The original Philippine commission having rendered a report (31 Jan. 1900), the President appointed a new commission, known from its head, Judge W. H. Taft, as the Taft commission, under whose direction civil government was instituted in the islands on 1 Sept. 1900. (See PHILIPPINES. *History*). In 1900 the President stood conspicuously for justice in the settlement of the difficulties in China which marked that summer. He was renominated for the Presidency by the Republican National Convention which met at Philadelphia on 25 June 1900, receiving the entire vote of the 930 delegates. He was elected by a popular vote of 7,206,677 to 6,374,397 for W. J. Bryan, receiving

till then, the largest popular majority ever given a candidate for the Presidency. He obtained 292 electoral votes and carried 28 States. On 5 Sept. 1901 he delivered at the Pan-American Exposition, Buffalo, N. Y., an important address, summarizing at once the problems then before the nation and his policy for their solution. On 6 September, while holding a reception in the Music Hall of the Exposition, he was twice shot by Leon Czolgosz (q.v.), an anarchist. He died on 14 September; and 19 September was appointed by his successor, President Roosevelt, a day of mourning and prayer throughout the United States. Unprecedented honors were paid to McKinley's memory in foreign capitals, notably in London, where memorial services were held in Westminster Abbey and Saint Paul's Cathedral. A statue was erected in his honor at Columbus, Ohio, and unveiled in 1906. Consult Smith (editor), 'Speeches and Addresses of William McKinley' (1893); Porter, 'The Life of Major McKinley' (1896), and 'Speeches and Addresses of William McKinley from 1897 to 1901' (1900). See also UNITED STATES, *History*.

**McKINLEY**, Mount, United States, a peak of the Rocky Mountains, the highest in North America, south of the central part of Alaska, about 155 miles north of Cook Inlet. The Indian name for this peak is Traleyka and the Russian name, Bolshaya. The fact that this is the highest land on the continent was not known till 1896 when Mr. Dickey explored the Sushitna River and the land near its source. He estimated the height of the peak at 20,000 feet, and named it McKinley, in honor of William McKinley (q.v.). In 1903 it was visited by members of the United States Geological Survey. The mountain is a great dome-shaped mass, 20,300 feet above the sea. Consult Balch, E. S., 'Mount McKinley and Mountain Climbers' Proofs' (Philadelphia 1914); Browne, A., 'The Conquest of Mount McKinley' (New York 1914).

**McKINLEY ACT**, a name popularly given to a tariff bill reported to Congress, 21 May 1890, by the Ways and Means Committee of the House of Representatives, of which William McKinley was chairman. It became a law in October 1890 and was repealed in 1894. It increased the duties on wool, woollen manufactures, on tin-plate, barley and some other agricultural products and remitted the duty on raw sugar. The reciprocity feature was an important part of the bill, providing for the remission of duty on certain products from those countries which should remove duties on American imported products. See **TARIFF**.

**McKINNEY**, Mrs. Glen Ford. See **WEBSTER**, JEAN.

**McKINNEY**, ma-kin'ē, Texas, city and Collin County seat, alt. 612 feet, on the Southern Pacific; Louisiana and Arkansas; and Texas Electric railroads, 33m. N. of Dallas, and on state and federal highways. In a rich agricultural area, it has extensive dairying industries. McKinney's principal industries are textile milling, flour milling, and cotton compressing. There is a city library, a general hospital, and a municipal pool and playground. The place was named for, and has a monument to, Collin McKinney, a signer of the Texas declaration of

independence. Near the city is the Collin McKinney home, built in 1832. It has a commission government. The water system is municipally owned. Pop. (1930) 7,307; (1940) 8,555.

**MACKINTOSH**, māk'in-tōsh, **Sir James**, Scottish historian and philosophical writer: b. Aldourie, Inverness-shire, 24 Oct. 1765; d. London, 30 May 1832. He was educated at Aberdeen and Edinburgh; studied medicine and took the M.D. degree in 1787; published his 'Vindiciæ Gallicæ' in answer to Burke's 'Reflections on the French Revolution'; quitted the medical profession and was called to the English bar in 1795. By reason of his brilliant lectures on the 'Laws of Nature and Nations,' and his defense of Peltier, who was prosecuted for a libel on Napoleon Bonaparte, he acquired fame at the bar, and in 1804 was appointed recorder of Bombay and received the honor of knighthood. After an honorable career in India he returned to England, entered Parliament for Nairn and afterward for Knaresborough; was professor of law at Haileybury College (1818-24), a member of Privy Council and in 1830 commissioner of the Board of Control. Among his writings may be mentioned his 'History of England,' a fragment extending only to the reign of Elizabeth; 'Dissertation on the Progress of Ethical Philosophy' in the Encyclopædia Britannica; a 'Life of Sir Thomas More' in Lardner's 'Cyclopædia,' and nine chapters of an unfinished work on the Revolution of 1688.

**MACKINTOSH**, a water-proof overcoat, or outer garment, one of the products of modern rubber manufacture. It derives its name from the inventor, Charles Mackintosh of Manchester (1766-1843). See RUBBER.

**MACKLIN**, māk'lin, **Charles**, Irish actor and dramatist: b. Ireland, 1 May 1697; d. London, 11 July 1797. He was the son of an Irish gentleman named McLaughlin and in 1733 appeared in minor parts at Drury Lane, London. He steadily rose in public favor, till 1741 he appeared in his greatest rôle, Shylock. He was accounted from this period among the best actors of the time. His last performance was at Covent Garden in May 1789, at past the age of 90. In 1735 he accidentally killed a brother actor in a quarrel and was tried for murder, and was frequently afterward engaged in disputes and actions at law. Of his own plays only 'The Trueborn Irishman'; 'Love a-la-Mode' (1759), and 'The Man of the World' (1781) have been printed. Consult 'Life' by Parry (1891).

**MACKUBIN**, māk-kūb'in, **Florence**, American artist: b. Florence, Italy, 19 May 1861; d. 7 Feb. 1918. She was of American parentage, and studied under Louis Deschamps and Julius Rolshoven in Paris and Herterrich in Munich, also miniature painting under Mlle. J. Devina in Paris. Since completing her studies she has lived chiefly at Baltimore, Md. She has specialized in portrait and miniature painting, and her work was exhibited at the Columbian Exposition, 1893; the Tennessee Exposition in 1897; at Paris, 1900; at Buffalo, 1901; Charleston, 1902, and Saint Louis, 1904. She was officially commissioned to execute various portraits for the Executive Mansion and State House, Maryland, among them a copy of Van

Dyck's portrait of Queen Henrietta Maria, and portraits of Governors Calvert and Eden of Maryland. Among other portraits are those of Sir Charles Drury at the Admiralty House, Chatham, England, and Sir William Van Horne, Canada. Her miniatures won a medal at the Tennessee Exposition. Among them is one of Cardinal Gibbons.

**McLACHLAN**, māk-lak'lān, **Alexander**, Scottish Canadian poet: b. Johnstone, Renfrewshire, Scotland, 12 Aug. 1818; d. Orangeville, Ontario, 20 March 1896. He removed to Canada in 1841, was Canadian immigration agent to Scotland in 1862, and in 1874 delivered in Scotland a series of lectures on Canadian life. He lectured also in Canada and the United States. He was a man of broad and democratic sympathies and was deeply interested in the betterment of conditions among the working classes. Author of 'Poems, Chiefly in the Scottish Dialect' (1855); 'Lyrics' (1858); 'The Emigrant and Other Poems' (1861); 'Poems and Songs' (1874).

**MACLAGAN**, William Dalrymple, English archbishop: b. Edinburgh, 18 June 1826; d. 19 Sept. 1910. He was educated at Edinburgh and was graduated in mathematical honors at Cambridge University. He served in the Indian army (1847-49); was ordained deacon (1856) and priest (1857). He was appointed bishop of Lichfield (1878) and archbishop of York in 1891. He published 'Pastoral Letters and Synodal Charges' (1892).

**McLANE**, māk-lān', **Allan**, American soldier and jurist: b. 8 Aug. 1746; d. Wilmington, Del., 22 May 1829. In 1774 he settled in Kent County, Del., and in the Revolution he took a prominent part. He became a lieutenant in Thomas Rodney's regiment of Delaware militia, where he rendered important service at Long Island and White Plains and also in the New Jersey campaign. In 1777 he was made captain and was in command of the American guard about Philadelphia, taking active part in the battle of Monmouth. With the rank of major under Gen. Henry Lee he participated in the capture of Stony Point and Paulus Hook and attained colonel's rank. At the close of the war he was appointed judge of the Delaware Court of Appeals. In 1790-98 he was United States marshal of Delaware under Washington's appointment, and from 1808 until his death collector of Wilmington (Del.) port. He also served in the Delaware legislature, being for a time speaker of the lower house.

**McLANE**, James Woods, American physician: b. New York, 19 Aug. 1839; d. 25 Nov. 1912. He was graduated at Yale University in 1861 and took his M.D. at the College of Physicians and Surgeons, Columbia, in 1864. He was thereafter for many years connected with the medical faculty of the College of Physicians and Surgeons, as lecturer on materia medica in 1866-67, professor of materia medica and therapeutics 1868-72, adjunct-professor of obstetrics, diseases of women and children and medical jurisprudence in 1872-79, professor of gynecology in 1882-85 and of obstetrics in 1891-98. He became professor emeritus in 1898; and in 1891-1903 he was dean of the medical faculty. From 1905 until his death he was president of Roosevelt Hospital.

**McLANE, Louis**, American statesman: b. Smyrna, Kent County, Del, 28 May 1786; d. Baltimore, 7 Oct. 1857. He was the son of Allan McLane (q.v.), and entering the navy at an early age, served as a midshipman under the elder Decatur. Quitting the navy in 1801 he studied law, was admitted to the bar in 1808 and rose to eminence in the profession. He represented Delaware in Congress, 1816-27, when he was chosen United States senator. In 1829-31 he was Minister to Great Britain, and on his return home was made Secretary of the Treasury. In 1833 he declined to sanction the removal of the deposits from the United States Bank, and was consequently transferred by the President to the State Department. He held the office of Secretary of State till June 1834, when he resigned and retired from political life. In 1837 he accepted the presidency of the Baltimore and Ohio Railroad, which he held till 1847. In June 1845 he was appointed by President Polk ambassador to London during the Oregon negotiations, after the settlement of which he resigned. In 1850 he was a member of the convention to reform the constitution of Maryland.

**McLANE, Robert Milligan**, American politician and diplomat: b. Wilmington, Del, 23 June 1815; d. Paris, France, 16 April 1898. He studied at the Collège Bourbon of Paris (1829-31), was graduated from West Point in 1837, took active part in the Seminole War in Florida (1837), and served under General Scott in the Cherokee country (Georgia). He resigned from the army in 1843, and having already been admitted to the bar in the District of Columbia, began practice at Baltimore, Md. In 1847-51 he was a Democratic member of the House of Representatives in the 30th and 31st Congresses. In 1853 he was appointed commissioner, with powers of minister plenipotentiary, to China, Japan, Siam, Korea and Cochin China; and from this mission he returned in 1856, having with Commodore Perry concluded important treaties. In 1859-61 he was Minister to Mexico, in which capacity he signed the treaty of 1860. In 1861 he returned to Baltimore and there took a prominent part in the discussions attending the secession of the Cotton States. He was one of the committee appointed by the Maryland legislature (May 1861) to confer with Lincoln in regard to alleged unconstitutional proceedings on the part of the Federal government within the State of Maryland. Upon the decision of the State legislature, based on the committee's report, that it was inexpedient for Maryland to secede, McLane retired from public affairs for a time. In 1877-78 he was State senator; in 1879-83 a representative in the 46th and 47th Congresses; and in 1883-85 governor of Maryland. He was Minister to France in 1885-89 by appointment of President Cleveland. After tendering his resignation in 1889, he spent his remaining years at Paris.

**MACLAREN, ma-kłār'en, Ian.** See WARSON, JOHN.

**McLAREN, William Edward**, American bishop: b. Geneva, Ontario County, N. Y., 15 Dec 1831; d. New York, 19 Feb. 1905. He was graduated at Jefferson College, 1851, ordained to the Presbyterian ministry, 1860, and entered that of the Protestant Episcopal Church in 1872. Three years later he was appointed

bishop of Illinois; after the subsequent division of the diocese became bishop of Chicago. He founded the Western Theological Seminary at Chicago (1883) and the Waterman Hall for Girls at Sycamore, Ill. Among his writings may be mentioned 'Catholic Dogma the Antidote of Doubt' (1884); 'Analysis of Pantheism' (1885); 'The Holy Priest' (1889); 'The Essence of Prayer' (1901).

**McLAUGHLIN, māk-lāk'lin, Andrew Cunningham**, American historical writer: b. Beardstown, Ill, 14 Feb 1861. He was graduated from the University of Michigan in 1882, from its law school in 1885, was professor of history there 1891-1906 and since 1906 at the University of Chicago. (He was director of the bureau of historical research of Carnegie Institution, Washington, D. C., 1903-05, and managing editor of the *American Historical Review*, 1901-05. He has written 'Lewis Cass' (in 'American Statesman' series 1891); 'History of Higher Education in Michigan'; 'History of the American Nation' (1899); 'The Confederation and the Constitution' (1905); (with Van Tyne) 'History of United States for Schools' (1911); 'The Courts, The Constitution and Parties' (1912); 'Steps in the Development of American Democracy'; and edited 'The Cyclopaedia of American Government' (1914).

**McLAUGHLIN, Mary Louise**, American artist: b. Cincinnati. She began to decorate pottery in 1877 and made Losanti porcelain (1898), exhibiting for the first time in the Paris Exposition of 1900. She has been awarded several public honors for her work. Among her published writings are 'China Painting'; 'Pottery Decoration'; 'Painting in Oil'; 'The Second Madame'; 'An Epitome of History' (1923).

**MACLAURIN, māk-lā'rin, Colin**, Scottish mathematician and philosopher: b. Kilmorland, Argyshire, February 1698; d. 14 June 1746. He was educated at Glasgow University, and in 1717 became professor of mathematics in Marischal College, Aberdeen, and two years after was chosen Fellow of the Royal Society. In 1720 he published 'Geometrica Organica,' a work on curves. In 1725 he was elected professor of mathematics at Edinburgh, where his lectures contributed much to raise the character of that university as a school of science. A controversy with Bishop Berkeley led to the publication of Maclaurin's great 'Treatise on Fluxions' (1742). He also wrote a 'Treatise on Algebra'; 'Account of Sir Isaac Newton's Philosophical Discoveries,' etc.

**MACLAURIN, Richard Cockburn**, American educator: b. Lindean, Scotland, 5 June 1870; d. Boston, Mass., 15 Jan. 1920. He took his M.A. at the University of Cambridge in 1897, was elected a Fellow at Saint John's College, Cambridge, in 1897 and was professor of mathematics there in 1898-1905. He was dean of the faculty of law at the New Zealand University in 1905-07; and in 1907-09 he was professor of mathematics at Columbia University, New York. After 1909 he was president of the Massachusetts Institute of Technology. He wrote 'Title to Realty'; 'Theory of Light'; 'Lectures on Light.'

**McLAWS, māk-lāz', Lafayette**, American military officer: b. Augusta, Ga., 15 Jan. 1821; d. Savannah, Ga., 24 July 1897. He was grad-

ated at West Point in 1842; served in the Mexican War till the surrender of Vera Cruz; and at the beginning of the Civil War was commissioned a brigadier-general in the Confederate army. He was promoted major-general 23 May 1862, and during the march of Sherman to the sea commanded the defenses of Savannah and had charge of the military district of Georgia. He was appointed collector of internal revenue at Savannah in 1875 and postmaster there in 1876.

**MACLAY, ma-klä', Edgar Stanton**, American author: b. Foochow, China, 18 April 1863. He was graduated at Syracuse University in 1885; was reporter on the *Brooklyn Times*, 1886-90, and on the *New York Tribune* 1891-93; served on the editorial staff of the *Tribune*, 1893-95, and on that of the *New York Sun*, 1895-96. In 1896 he was appointed lighthouse-keeper at Old Field Point, and in 1901 received an appointment at the New York navy yard. He edited the *'Journal'* of William Maclay (q.v.), and was the author of a *'History of the United States Navy,'* which occasioned much controversy and brought about his dismissal from government employ, by order of President Roosevelt, in 1901. The ground of this action, following Maclay's refusal of an official request for his resignation, was a passage in the *'History'* stigmatizing Read-Admiral Schley as a "caitiff, poltroon and coward" for his conduct in the naval fight off Santiago, Cuba, 3 July 1898. Maclay also wrote *'Reminiscences of the Old Navy'* and *'The History of American Privateers.'* He died 2 Jan. 1919.

**MACLAY, Robert Samuel**, American Methodist Episcopal clergyman: b. Concord, Franklin County, Pa., 7 Feb. 1824; d. 1907. He was graduated at Dickinson College in 1845 and entered the Methodist ministry in 1846. He sailed as a missionary to Foochow, China, 13 Oct. 1847. He was a member of the committee which translated the New Testament into the Foochow dialect; and in 1852-72 he was superintendent and treasurer of the Foochow Mission. He was transferred to Japan in 1872, becoming secretary and treasurer of the mission there; and assisted in translating the New Testament into Japanese. He was a delegate from Japan to the Ecumenical Methodist Conference at London in 1881. He was one of the founders of the Anglo-Chinese College at Foochow in 1881; and in 1884 he secured from the king of Korea permission to establish Christian missions in that country. He was instrumental in founding at Tokio in 1883 the Anglo-Japanese College, of which he was president in 1883-87; and the Philander Smith Biblical Institute in 1884, serving as dean in 1884-87. He was dean of the Maclay College of Theology at San Fernando, Cal., from 1888 until his retirement in 1893. Author of *'Life Among the Chinese'* (1861); coauthor with Rev. C. C. Baldwin *'Dictionary of the Chinese Language in the Dialect of Foochow'* (1871).

**MACLAY, William**, American soldier and politician: b. New Garden, Chester County, Pa., 1737; d. 1804. He was educated in his native place; was a lieutenant in the French and Indian War, taking part in the expedition against Fort Duquesne in 1758 and afterward serving under General Bouquet. He studied law, was admitted to the bar, went to England

on behalf of militia officers serving in the French and Indian War, to confer upon their claims for land-grants with the proprietors of Pennsylvania, and on his return became attorney to the Penn family. In the Revolution he raised troops and equipped them, was assistant commissary of purchase and performed some field service. In 1781 he was elected to the Pennsylvania assembly, afterward held other offices in the State, and with Robert Morris (q.v.) was elected to the United States Senate, Pennsylvania's first representatives in that body. His service there ended in 1791, but in the Senate he had shown deep-seated hostility to Washington and his administration, which was the chief distinction of Maclay's senatorial career. In his later years he was a member of the Pennsylvania legislature and his last public office was that of a county judge. Consult his *'Journal,'* edited by Edgar Stanton Maclay (q.v.).

**MACLE, mäk'l**, in mineralogy, a variety of andalusite, occurring in long, tapering crystals in clay-slate. They have the axes and angles of a different color from the rest of the crystals, owing to a regular arrangement of impurities in the interior.

**MacLEAN, George Edwin**, American educator: b. Rockville, Conn., 31 Aug. 1850; d. 3 May 1938. He was graduated at Williams College in 1871 and at Yale Theological Seminary in 1874; from 1877 to 1881 was pastor at Troy, N. Y.; studied in Germany; and in 1883 became professor of English language and literature at the University of Minnesota. He was chancellor of the University of Nebraska, 1895-99, and from 1899 to 1911 was president of the University of Iowa. In 1913 he was sent by the United States Bureau of Education to make a study of the English universities and colleges. His writings include *'A Chart of English Literature'* (1892); *'Old and Middle English Reader'* (1893); and *'A Decade of Development in American State Universities'* (1898); *'Present Standards of Higher Education in the United States'* (1913); *'Studies in Higher Education in England and Scotland, with Suggestions for Universities and Colleges in the United States'* (1916); *'The New International Era'* (1923). He edited *'Ælfric's Anglo-Saxon Version of Alcuin's Interrogations Sigewulfi Presbyteri in Genesin'* (1883); *'An Introductory Course in Old English,'* by Wilkin and Babcock (1888) and *'An Old and Middle English Reader,'* by Zupitza (1889).

**McLEAN, George Payne**, American lawyer and politician: b. Simsbury, Conn., 7 Oct. 1857. He was for a time a reporter on the *Hartford Evening Post*, then studied law, and was admitted to the bar in 1881, and immediately commenced practice in Hartford. In 1883-84 he was a member of the general assembly, where he soon became distinguished for facility in debate and was considered one of the leaders of the Republican party. In 1888 he was elected State senator and in 1900 nominated by his party as governor of Connecticut and elected. Though he was not widely known at the time of his election, his independent position in regard to constitutional reform soon made him prominent; both in his first governor's message and before the constitutional convention, he advocated representation in the



legislature according to population instead of by towns. Though in this he opposed certain elements in his own party, he gained support from a considerable number of Democrats and great personal popularity in the cities. In 1902 he was offered renomination, but declined; in 1903-04 he was a prominent candidate for United States senator. He was elected to the United States Senate in January 1911 and took office on March 4 following. He was re-elected in 1917 and 1923. He was the author of the "Federal Migratory Bird Bill," which became a law on March 4, 1913. He died June 6, 1932.

**MacLEAN, James Alexander**, Canadian educator: b. Mayfair, Ontario, Aug. 2, 1868. He was graduated at the University of Toronto in 1892 and took his A.M. at Columbia in 1893. He was professor of political science at the University of Colorado in 1894-1900; president of the University of Idaho in 1900-13; and from 1913 to 1934 was president of the University of Manitoba, Canada. Author of essays in *The Financial History of Canada* (1894). He died in London, Eng. Jan. 18, 1945.

**MacLEAN, John**, American jurist and statesman: b. Morris County, N.J., March 11, 1785; d. April 4, 1861. He removed with his parents to Warren County, Ohio, in 1799, later went to Cincinnati, where he studied law, and was admitted to the bar in 1807, and commenced practice at Lebanon, Warren County, Ohio. He was a member of Congress 1812-16, and from 1816-22 judge of the supreme court of Ohio. In July 1823 he was appointed postmaster general, the Post Office Department being then in a very disordered and inefficient condition. Under his administration this branch of the public service was restored to order, and managed with a vigor, method and economy that soon secured an almost unexampled degree of applause and public confidence. In 1829 he became associate justice of the Supreme Court of the United States. In this capacity his charges to grand juries while on circuit are distinguished for ability and eloquence. In the Dred Scott case he dissented from the decision of the court as given by Chief Justice Taney, and expressed the opinion that slavery has its origin merely in power, and is against right and in this country is sustained only by local law.

**McLEAN, John**, American educator: b. Princeton, N.J., 1800; d. there, 1886. His whole life was spent in Princeton. He was graduated from the college there in 1816, became tutor in the institution in 1818 and was a member of the faculty till 1868, when he resigned the presidency, which he had held from 1854. He published *Lecture on a Common School System for New Jersey* (1829), which in later years had much influence in the establishment of such a system; *History of the College of New Jersey* (1877), and *The True Relations of the Church and the State to Schools and Colleges* (1853).

**MACLEAN, John**, Canadian Methodist clergyman and author: b. Kilmarnock, Scotland, Oct. 2, 1851. He was educated at Victoria University, Cobourg, Ontario, and at the Wesleyan University, Bloomington, Ill. He served as a missionary among the Blood Indians near Macleod, Alberta, in 1880-89, and was pastor at Moose Jaw, Saskatchewan, in 1889-92; later

filling pastorates at Port Arthur; and at Neepawa and Carman, Manitoba. In 1902-06 he edited *The Wesleyan*, and thereafter was stationed at Morden, Manitoba. In 1888 he was appointed a member of the Northwestern Board of Education. Author of *The Indians of Canada* (1892); *The Destiny of the Human Race*, *The Hero of the Saskatchewan*; *Better Lives for Common People*; *Science and the Bible*. D. March 27, 1928.

**McLEAN, Norman**, British Orientalist: b. Lanark, Scotland, Oct. 2, 1865. He was educated at the University of Edinburgh and at Christ College, Cambridge. He was examiner in classics at Edinburgh University in 1891-94; examiner for Oriental Languages Tripos in 1895-96, 1899-1900, 1909-11, and for theological Tripos in 1896-97, 1901-02, 1908-09, 1911-12. He was Fellow, senior tutor, Hebrew lecturer and Master at Christ College, Cambridge, and university lecturer in Aramaic. He edited with Rev. A. E. Brooke, a larger Cambridge edition of the Septuagint. He was an editor of *Ecclesiastical History of Eusebius in Syria* (1896).

**McLEAN, Sarah Pratt**. See GREENE, SARAH PRATT McLEAN.

**MacLEISH, Archibald**, American poet, librarian, and public official: b. Glencoe, Ill. May 7, 1892. He received his preliminary education at The Hotchkiss School, Lakeville, Conn., and was graduated from Yale University in 1915. He served in the First World War as a captain of field artillery, and in 1919 was graduated from Harvard Law School. In 1923 he abandoned the law to devote his time to the writing of poetry, developing into one of America's foremost poets. His published works include *The Happy Marriage* (1924); *The Pot of Earth* (1925); *Nobodaddy* (a play, 1925); *Streets in the Moon* (1926); *The Hamlet of A. MacLeish* (1928); *New Found Land* (1930); *Conquistador*, which won the Pulitzer prize for poetry (1932); *Frescoes for Mr. Rockefeller's City* (1933); *Union Pacific—a Ballet* (1934); and *Panic* (a play, 1935). He also wrote two radio verse dramas, *The Fall of the City* and *Air Raid*. On June 7, 1939 he was nominated by President Roosevelt to succeed Dr. Herbert Putnam, retiring Librarian of Congress, and the Senate confirmed his nomination June 29. In December 1944 at the instance of Secretary of State Stettinius he was appointed assistant secretary of state in charge of public and cultural relations. He resigned the post August 1945.

**McLEMORE'S COVE, Ga., Military Operations at.** While there was little fighting in the cove, the operations there in September 1863 were vital to the success of General Rosecrans' campaign for Chattanooga. The failure of General Bragg's excellent combinations immediately increased the difficulty of interposing his army between the Union army and Chattanooga and, in the end, made it impossible.

Lookout Mountain bounds the cove on the west. Following its eastern base from Chattanooga southward, it is 24 miles to Stevens' Gap, over which the Fourteenth corps, General Thomas', which constituted the center of Rosecrans' army, crossed Lookout from the west into the cove. Eight miles beyond is Dougherty's Gap, from which point Pigeon Mountain, run-

ning northeastwardly, forms the eastern boundary of the cove. The triangular area thus enclosed is from five to eight miles wide, the mouth opening toward Chattanooga, and contains from 80 to 100 square miles. General Bragg, in evacuating Chattanooga, because of Rosecrans' flank movement, had conducted his army by way of Rossville and Lee and Gordon's Mill and established it behind Pigeon Mountain, from a point near Lee and Gordon's to Lafayette, 13 miles beyond. From this position of his army there were four gaps through which roads led into McLemore's Cove. Opposite Lafayette was Dug Gap, to the south of it Blue Bird and to the north Cattlett's and Wrothen's. Dug Gap was directly opposite Stevens' Gap. The Chickamauga Creek rises near Dougherty's Gap and runs northward through the cove.

The right of the Union army, A. McD. McCook's Twentieth corps, with the cavalry corps, Gen. D. S. Stanley, crossed Lookout at Valley Head, 42 miles south of Chattanooga, and descended south of Dougherty's Gap. The left of this army, Crittenden's Twenty-first corps, had crossed the north point of Lookout near Chattanooga and, leaving one brigade in that city, had advanced to the vicinity of Lee and Gordon's Mill. It there formed the left of the Union army. The centre corps was at Stevens' Gap, 15 miles distant, the right corps about 25 miles beyond that point, with the cavalry still farther south. This separation of Rosecrans' army was made necessary by the fact that there were no roads practicable for wheels crossing Lookout Mountain in closer proximity.

General Bragg was fully informed of the movements, and the isolation of the several Union corps. These movements, which placed each corps beyond supporting distance from either of the others, were immediately rendered still more precarious by reports received from General Sheridan on the extreme right that the enemy was retreating toward Rome, which led General Rosecrans to order pursuit. General Thomas urged active concentrations instead, but was overruled.

General Bragg, from his position behind Pigeon Mountain, commanding the four gaps opening directly upon the advance of the centre across the cove, was in most favorable position for first striking General Thomas with effect, and then turning upon either of the wings before they could attain supporting distance. Had Bragg's orders been promptly and vigorously executed the situation of the Union army would have been critical.

The night of the 9th, Negley's division, forming the Union advance from Stevens' Gap along the road leading through Dug Gap to Lafayette, encountered the enemy in the gap, and later in the night it was ascertained that a strong force was concentrating there.

General Bragg, in developing his plan, had advanced Hindman's division from the Lafayette side of the mountain, and ordered General Hill to send Cleburne to co-operate. Late at night Hill sent word that Cleburne was sick, the gaps blocked with felled trees and that the movement was, therefore, impracticable.

Early the next morning General Buckner from the extreme right was ordered to advance into the cove to support Hindman. This junction was not effected until the afternoon of the 10th. Meantime, Negley had withdrawn his

division from Dug Gap and was manœuvring in defense. Hindman, instead of attacking as ordered, sent a staff-officer to Bragg at Lafayette to suggest a change of plan. This officer reached Bragg at midnight and was at once directed to return and notify Hindman to carry out the orders he had received. Cleburne was then in Dug Gap, and had promptly cleared away obstructions. Walker's reserve corps was ordered forward to join Cleburne in the attack, and all impatiently waited for Hindman's guns. Bragg had ordered seven divisions to co-operate in this movement against Thomas, three which composed the Union centre. Hindman did not attack until afternoon. At that time Baird's division had arrived from Stevens' Gap to support Negley, and by brilliant movements in retreat, with some sharp fighting by T. R. Stanley's and Starkweather's brigades, the two divisions with their trains were withdrawn in perfect order to Bailey's crossroads, a strong strategic position in front of Stevens' Gap, where Brannan's division, which had completed the crossing of Lookout, was within easy supporting distance. Thus Bragg's attempt to crush the Union centre failed. For this failure he held Hill and Hindman responsible.

Bragg then withdrew the forces operating against the Union centre to Lafayette, and at once dispatched Polk's and Walker's corps with orders to attack Crittenden's corps in the vicinity of Lee and Gordon's Mill. This corps at the time was known to Bragg to be divided, with one of its three divisions near Ringgold. Polk was urged to attack with the greatest promptness. He, however, was led to believe that a general attack on his column was about to be delivered. Instead of carrying out Bragg's orders, he therefore awaited attack and sent for the whole of Buckner's corps as reinforcements. This delay enabled Crittenden to unite his forces, cross the Chickamauga, and take a strong position on the bluffs overlooking that stream at Lee and Gordon's. Thus Bragg's attempt to crush the Union left failed, as his movement on the centre had miscarried. For this Polk was held responsible.

Meantime the Union right was withdrawing under orders to join the centre at Stevens' Gap. Rosecrans had early discovered that Bragg, instead of retreating, was concentrated for battle, and that Johnston from Mississippi and Longstreet from Virginia were about to join him. General Rosecrans in his report says: "It then became a matter of life and death to effect the concentration of the army." The flanks of the army were 40 miles apart by the nearest practicable roads, and the centre was obliged to remain near Stevens' Gap until the right corps arrived.

General Bragg's third plan, for which orders were promptly given, was to move his army down the valley of the Chickamauga, cross at the bridges and fords below Lee and Gordon's Mill, sweep up the valley, attack Crittenden, the left of Rosecrans' army drive it back on the centre, and thus, interposing between the Union army and Chattanooga, push it back into the mountains and regain that most important city. Rosecrans, however, by an undiscovered night march moved his centre and right from the cove to the left of Crittenden, and at sunrise of 19 September had interposed between Bragg and Chattanooga on the field of Chickamauga.

These movements of the opposing armies brought on the battle of Chickamauga (qv.)

H. V. BOYNTON.

**McLENNAN, John Cunningham**, Canadian physicist: b. Ingersoll, Ontario, 14 April 1867. He was educated at the universities of Toronto and Cambridge. From 1899 he was connected with the faculty in physics at Toronto, and after 1907 he served as professor of physics and director of the physical laboratory there. He was president of section III of the Royal Canadian Society in 1910; was elected to the Royal Society, London, in 1915; and in 1916-17 he was president of the Royal Canadian Institute. He was Dominion lecturer on the metric system in 1906, and was author of papers on radio-activity, electrical conduction of gases and spectroscopy. D. 9 Oct. 1935.

**McLENNAN, māk-lēn'an, John Ferguson**, Scottish sociologist: b. Inverness, 14 Oct. 1827; d. Hayes Common, Kent, 16 June 1881. He was educated at King's College, Aberdeen, and Trinity College, Cambridge, and after two years spent in journalism in London returned to Edinburgh, and was called to the bar in 1857. His first important publication was the article on 'Law' in the eighth edition of the 'Encyclopædia Britannica' (1857), and in 1865 he elaborated some of its speculations in 'Primitive Marriage: an Inquiry into the Origin of the Form of Capture in Marriage Ceremonies'. In 1876 his 'Primitive Marriage' was republished with 'Kinship in Ancient Greece' and other matter under the title of 'Studies in Ancient History.' An unfinished work by him, directed against Sir H. S. Maine's patriarchal theory, was completed and published in 1885 by his brother under the title of 'The Patriarchal Theory'. In 1896 a second series of 'Studies in Ancient History,' treating of the origin of exogamy, was edited by his widow and Arthur Platt. Though his views are still and probably will remain matter of controversy, the study of primitive society received a powerful impetus from his important investigations.

**McLEOD, māk-loud', Alexander**, American Presbyterian clergyman: b. Island of Mull, Scotland, 12 June 1774; d. New York, 17 Feb. 1833. He came to the United States in 1792 and was graduated at Union College in 1798. He was licensed to preach in 1799 and was ordained in charge of the First Reformed Presbyterian Church of New York and of a church in Wallkill, N. Y. He soon resigned from the Wallkill charge, but retained his New York pastorate the remainder of his life. He was for a time an editor of the *Christian Magazine*. Author of 'Negro Slavery Unjustifiable' (1802); 'Ecclesiastical Catechism' (1807); 'View of the Late War' (1815); 'The American Christian Expositor' (2 vols., 1832-33), etc.

**McLEOD, Archibald Angus**, American railway official: b. Compton County, Quebec, Canada, 1848; d. 1902. Early in life he came to the United States, where he became a rodman on the docks of the Northern Pacific Railway at Duluth, and in 1885 manager of the Elmira, Cortland and Northern line. He then was successively acting general manager (1886), vice-president and general manager (1887) and president (1890) of the Reading system. His consolidation of the Lehigh Valley and Jersey

Central with the Reading, under Reading control, for the purpose of controlling the carrying trade of the coal fields, resulted in the Reading passing into the hands of three receivers, of whom McLeod was one.

**MacLEOD, Donald**, Scottish Presbyterian clergyman and author: b. Campsie, Stirlingshire, 18 March 1831; d. 17 Dec. 1911. He was a brother of Norman MacLeod (qv.), whom he succeeded as editor of *Good Words*, 1872-1905. He was educated at the University of Glasgow. He held pastorates at Lauder (1858), Linlithgow (1862) and Glasgow (1869-1909), and, like his brother, was chaplain to Queen Victoria. He published 'Sunday Home Service' (1885); 'Christ and Modern Society' (1893), etc.

**MACLEOD, Fiona**, pseudonym of William Sharp (qv.), Scottish poet and novelist: b. Paisley, 12 Sept. 1856; d. Sicily, 13 Dec. 1905. A part of his youth was spent in the Hebrides and in the islands of Iona and Arran. His stories and poems attracted great attention by reason of their freshness of treatment and originality of conception. Under his own name he published a number of works, including poems, stories, and biography, beginning with a life of Rossetti in 1882. In 1893 he began writing mystical prose and verse under the pen name of 'Fiona Macleod,' and cleverly concealed his identity, going the length of supplying a fictitious biography of the lady, to 'Who's Who,' and corresponding, through his sister, with her admirers. He also wrote concurrently, under his own name. Among works published as Fiona Macleod are 'Pharais' (1895), a romance; 'The Mountain Lovers' (1895); 'The Sin-Eater and Other Tales' (1895); 'The Washer of the Ford' (1896); 'Green Fire' (1896); 'From the Hills of Dream' (1896); 'The Laughter of Peterkin' (1897); 'Through the Ivory Gate' (1901); 'The Silence of Amor' (1902).

**McLEOD, Hugh**, American soldier: b. New York, 1 Aug. 1814; d. Dumfries, Va., 2 Jan. 1862. He was graduated at West Point in 1835 and served on frontier duty at Fort Jesup, La., until June 1836, when he resigned. He then joined the Texans in their struggle against Mexico, and afterward practised law at Galveston, Tex. As brigadier-general of the Texas militia he was appointed by President Mirabeau B. Lamar of Texas to the command of an expedition planned to secure an establishment of trade between Texas and Mexico in 1841, but was taken prisoner by the Mexicans and not released until the following year, when the United States government intervened in his behalf. He served in the Texas Congress in 1842-43, fought through the Mexican War and was a member of the State legislature after the annexation to the United States. He joined the Confederate army in 1861 and served on the Rio Grande and in the first Virginia campaign.

**McLEOD, John**, Canadian pioneer: b. Stornaway, Island of Lewis, Scotland, 1788; d. Montreal, 24 July 1849. He was engaged in the service of the Hudson Bay Company in 1811, mustering men for the company's service in the Hebrides and conducting them to Canada. In 1812-16 he built the trading posts of the company for 500 miles westward of the Red River

establishment. He was the first man known to have traversed the continent from Hudson Bay to the Pacific coast. He was in charge of Norway House, the most important fur-trading establishment in that part of the country, in 1826-30. He was afterward in charge of the Saint Maurice district, extending from Hudson Bay to the Saint Lawrence. He was a man of wide influence among both the whites and the Indians and accomplished an important work in opening the northwest for settlement.

**MACLEOD, John James Rickard**, Canadian medical scientist: b. Dunkeld, Scotland, 6 Sept. 1876; d. 18 March 1935. He was educated at Aberdeen, Leipzig, and Cambridge universities and received his Ph.D. from the University of Toronto. Regius professor of physiology at the University of Aberdeen at his death, he was Anderson traveling fellow, University of Aberdeen in 1898-99, demonstrated in physiology at London Hospital in 1899-1903, MacKinnon scholar of the Royal Society, 1900-03, professor of physiology at Western University, Cleveland, Ohio, from 1903 to 1918, and professor at the University of Toronto from 1918 to 1935. In 1923 he was associate dean of the faculty of medical sciences. He was fellow of the Royal Society of Canada. His published works include: 'Diabetes Its Physiological Pathology'; 'Fundamentals of Physiology and Biochemistry in Modern Medicine'; 'Carbohydrate Metabolism and Insulin'; 'Insulin'; and various articles in scientific journals.

**McLEOD, Malcolm**, Canadian lawyer, son of John McLeod (q.v.); b. Green Lake, Saskatchewan, 21 Oct. 1821; d. Ottawa, September 1898. He was educated at Edinburgh, Scotland, later studied law in Montreal and in 1845 was admitted to the bar. He engaged in practice, was district judge for the counties of Pontiac and Ottawa in 1873-76 and in 1887 he became Queen's counsel. He was prominently connected with the projects of annexation of the Northwest territory to Canada and the building of a railroad to the Pacific. He was instrumental in securing the revocation of the Hudson Bay Company's charter, taking the matter to the British Colonial Secretary when the Canadian Parliament refused to act. Author of 'The Peace River' (1872); five pamphlets on 'The Pacific Railway' (1874-80).

**MACLEOD**, Canada, town and capital of Macleod District, Alberta, on Old Man's River, about 100 miles south of Calgary, and on the Canadian Pacific Railway. It is situated in a rich agricultural and coal-mining region, has natural gas, stone quarries, and deposits furnishing materials for the manufacture of cement and of bricks. It has a considerable trade in grain. The village is growing rapidly and is a post of the Royal North West Mounted Police. Pop. (1936) 1,365.

**MACLISE, ma-klēs', Daniel**, English painter: b. Cork, 1806; d. Cheyne Walk, Chelsea, 25 April 1870. He became a student at the Royal Academy in 1828, and began to exhibit in 1829, but it was not until 1833 that he established his reputation with his picture of 'Snap Apple Night.' Three years after he was elected an associate, and in 1840 he became a full member of the Royal Academy. MacLise was commissioned to paint for the new Houses of Par-

liament, and produced 'The Spirit of Chivalry'; 'The Spirit of Religion,' and the two great paintings of the 'Meeting of Wellington and Blücher after Waterloo,' and the 'Death of Nelson' (1858-64), for which patriotic paintings he refused all remuneration. Among his best-known pictures are 'Merry Christmas in the Baron's Hall'; 'The Ordeal of Touch'; 'The Marriage of Strongbow and Eva'; the 'Play Scene in Hamlet'; the 'Banquet Scene in Macbeth,' etc. His sketches, book illustrations, humorous drawings and outline portraits were very numerous. He declined the presidency of the Academy in 1866. His works show great fertility of invention, skill in composition and excellence in drawing, but his color is coarse, and his pictures are sometimes disagreeable unless seen from a distance. His mural paintings are now recognized to be the greatest historical paintings of their kind ever produced in England. Consult O'Driscoll, 'Memoir of Daniel MacLise' (1871).

**McLOUGHLIN, māk-lōk'lin, John**, Canadian pioneer and fur trader: b. Rivière du Loup, Lower Canada, 19 Oct. 1784; d. Oregon City, 3 Sept. 1857. He was educated in Canada and at Edinburgh, Scotland, studied medicine and in early manhood returned to Canada, where he entered the Northwest Company and was placed in charge of Fort Wallham, the chief depot of the company, situated at the mouth of the Kaministiquia River on Lake Superior. Upon the consolidation of the Northwestern and the Hudson Bay companies, in 1821, Dr. McLoughlin was appointed chief factor of the company in the Oregon country. Arriving overland at Astoria in 1824 he founded Fort Vancouver, which, situated advantageously near the confluence of the Columbia and Willamette rivers, became the headquarters of the company beyond the Rockies. When Dr. McLoughlin established the fort the Indians were so hostile that it was unsafe for parties of less than 60 men to travel the Columbia River, but under his management of the company's affairs it became safe for two men to traverse the distance between Oregon City and Fort Hall. In the entire period of his administration, from 1824 to 1846, there were no Indian wars in the Oregon country, although they broke out in 1847, the year after his resignation. He made Fort Vancouver a haven of refuge to emigrants arriving after the perilous journey overland, furnishing goods and provisions on credit and caring for their sick in direct opposition of the company's policy, which was to keep the land wild for the wild fur-bearing animals. During McLoughlin's administration the Oregon country was in the condition of joint occupancy by the United States and Great Britain. His courageous and humanitarian method of dealing with the situation, recognizing the equal rights of the American settlers with those of the British Fur-trading Association, undoubtedly went far toward preventing war between the British and American nations. However, the strictures upon his methods by Sir George Simpson, governor-in-chief of the Hudson Bay Company, culminated in an order to render no further aid to immigrants, and McLoughlin resigned rather than obey, although it cost him his income of \$12,000 a year. His resignation took effect in 1846, and he then retired to Oregon City where he had

extensive and partially improved land claims. Litigation over his claims embittered his last years, but after his death the land was restored to his heirs. He became an American citizen in 1848. The McLoughlin Institute was dedicated to his memory at Oregon City in 1907, and he is generally known as the "Father of Oregon." Consult the 'Reports' of the Washington Historical Society, the Oregon Historical Society and the Oregon Pioneer Association; Dye, E. E., 'McLoughlin and Old Oregon' (1900; 8th ed., 1913); Holman, F. V., 'Dr John McLoughlin, the Father of Oregon' (1907).

**McLOUGHLIN, Maurice Evans**, American tennis champion. b. Carson City, Nev., 1890. He won the championship of the Pacific Coast, played in the East in 1908-09 and in 1909 and 1911 he competed for the Davis cup in Australia, but unsuccessfully. He won the national championship at Newport in 1912; and in 1913 was leader of the American team that captured the Davis cup from England. He was victor at Longwood and won the New York State championship in 1914. His defeat of Brookes and Wilding in singles made him world champion. Author of 'Tennis as I Play It' (1915).

**McLOUTH, mäk-lowth', Lawrence Amos**, American educator and author: b. Ontonagon, Mich., 19 Jan. 1863; d. 1927. He was educated at the universities of Leipzig, Heidelberg and Munich. He was instructor in German at the University of Michigan in 1892-95; and after 1895 was professor of Germanic language and literature at New York University. He edited German texts, was author of numerous articles on literature, philology and pedagogy, and of 'Verses' (1910).

**MACLURE, mäk-lür', William**, American geologist. b. Ayr, Scotland, 1763; d. San Angel, near the city of Mexico, 23 March 1840. In 1796 he visited the United States, and in 1803 was in Europe as one of the commissioners to settle the claims of American citizens against France for spoiliations during the revolution in that country. On returning to America he engaged with zeal in the extraordinary private undertaking of a geological survey of the whole country. Depending on his own resources and observations at a time when geology was unknown as a science, and few could appreciate his motives, he visited almost every State and Territory, crossing and recrossing the Alleghenies no fewer than 50 times. His first communication to the public was a memoir entitled 'Observations on the Geology of the United States, explanatory of a Geological Map,' read before the American Philosophical Society, 20 Jan. 1809, and published in Vol. VI of their 'Transactions.' He still continued his explorations, and on 16 May 1817 presented another memoir to the society, published in their 'Transactions,' and also in a separate volume. The former publication was six years prior to that of the geological map of England prepared by William Smith, a production which gave him the title of father of English geology. To MacLure is equally due the title of father of American geology. His publications attracted much attention to the science. He now settled in Philadelphia and gave his books and collections to the Academy of Natural Sciences of which he was president from 1817 till his death. He lived in Spain, 1819-24, where he attempted to found an

agricultural college, and returning in 1824 to the United States attempted to carry out a similar scheme in the New Harmony settlement in Indiana. Several distinguished naturalists from Philadelphia joined him in this enterprise, but the scheme failed. After 1828 he lived in Mexico, always, however, with the intention of returning to the United States, and with his interest in the progress of scientific education there unabated. While in Mexico he wrote 'Opinions on Various Subjects,' devoted mainly to political economy (1837).

**McMAHON, mäk-ma'hon, Sir Arthur Henry**, British soldier and administrator: b. 28 Nov. 1862. He was educated at the Royal Military College at Sandhurst, joined the 8th Regiment in 1883 and in 1885 entered the Indian Staff Corps and joined the 1st Sikhs, Punjab Frontier. He became affiliated with the Indian Political Department in 1890 and served as political agent on various missions until 1901, when he became Revenue and Judicial Commissioner at Beluchistan. He was an arbitrator on the boundary between Persia and Afghanistan in Seistan and also served as British Commissioner to the Seistan Mission in 1903-05. He was Foreign Secretary to the Government of India in 1911-14. In 1914-16 he was High Commissioner of Egypt. He was knighted in 1906.

**McMAHON, James**, American mathematician: b. County Armagh, Ireland, 22 April 1856; d. 1 June 1922. He was graduated at the University of Dublin in 1881. He was examiner in mathematics 1883-84, instructor 1884-90, assistant professor 1890-96, and professor after 1904 at Cornell University. In 1891-97 he was associate editor of *Annals of Mathematics*. Professor McMahon was joint author of 'Higher Mathematics' (1896); the 'Cornell Mathematical Series,' and 'Plane Geometry' (1903).

**MacMAHON, Marie Edme Patrick Maurice de**, Duke of Magenta and Marshal of France. b. Sully, Saône et Loire, 13 June 1808; d. near Montargis, 17 Oct. 1893. He was descended from an Irish family that went into exile with James II, and was educated at the military college of Saint Cyr; served with distinction in Algeria; became brigadier-general in 1848; received command of a division during the Crimean War, and assisted in storming the Malakoff; was appointed to the Senate in 1856; took part in the campaign of 1859 against Austria, and won the battle of Magenta by his prompt handling of the left wing and was rewarded by a marshal's baton and a dukedom; and in 1864 became governor-general of Algeria. At the outbreak of war between France and Germany (1870) MacMahon was placed in command of the First army corps, which was defeated at Weissenburg and Worth, and finally fell back upon Châlons. Here he rallied his forces, and proceeded northeastward to relieve Bazaine, who was besieged in Metz, but he was pursued by the Germans, shut up by them in the town of Sedan and wounded in the battle before the final surrender with 81,000 men. After the armistice with Germany he was employed by the Versailles government in putting down the commune, and in 1873 was elected President of the republic, a position which he occupied until 1879. Consult Daudet, 'Souvenirs de la présidence du Maréchal de MacMahon' (Paris 1880); 'Le maréchal de MacMahon' (ib 1883);



LaFarge, 'Histoire complète de MacMahon, maréchal de France, duc de Magenta' (ib 1898).

**MacMANUS**, māk-man'ūs, **Seumas**, Irish novelist and writer of short fiction and verse. b. Donegal, 1868. He was educated at a mountain school in Donegal and engaged in teaching. He soon became known for his prose and verse contributions to periodicals, dealing with the traditions and folklore of Ireland. He visited America in 1899 and afterward his contributions appeared in many leading American periodicals. He has since made frequent lecture tours in America. Author of 'Through the Turf Smoke' (1899), 'Donegal Fairy Tales' (1900); 'Ballads of a Country Boy' (1905); 'The Leadin' Road of Donegal' (1900); 'Irish Nights'; 'Yourself and the Neighbors' (1914); 'Ireland's Case' (1917), etc. Among his plays are 'The Woman of Seven Sorrows'; 'Orange and Green'; 'Rory Wins'; 'Nabby Harren's Matching'; 'Top o' the Mornin',' etc.

**McMASTER**, John Bach, American historian. b. Brooklyn, 29 June 1852. He was graduated from the College of the City of New York in 1872, studied civil engineering, and 1877 became instructor of civil engineering at Princeton. In 1883 he published the first volume of his 'History of the People of the United States,' and the same year was appointed professor of American history in the University of Pennsylvania. His 'History,' of which eight volumes were published in 1913, has become a standard work. It covers a period reaching from the close of the Revolution (1783) to the outbreak of the Civil War,—less than 100 years, but a crucial time for the shaping of the country. The account of the formative time, the day of the pioneer and the settler, engaged his particular attention and received his most careful treatment. He strove to give a picture of social rather than constitutional and political growth; and tells the story of national evolution with admirable lucidity and simplicity of style, and always with an appeal to fact precluding the danger of the subjective writing of history to fit a theory. His other works are 'Benjamin Franklin as a Man of Letters' (1887); 'With the Fathers, Studies in American History' (1896); 'Origin, Meaning and Application of the Monroe Doctrine' (1897); 'A School History of the United States' (1897); 'A Primary School History of the United States' (1901); 'Daniel Webster' (1902); 'Brief History of the United States' (1903); chapters 9, 11 and 12, Vol. VII, 'Cambridge Modern History' (1903); 'Struggle for the Social, Political and Industrial Rights of Man in America' (1903); 'The United States in the World War' (1919); 'A History of the People of the United States' (1927). D. 24 May 1932.

**McMASTER**, William, Canadian senator and philanthropist. b. Tyrone, Ireland, 24 Dec. 1811; d. Toronto, Canada, 22 Sept. 1887. When 22 years of age he emigrated to Canada, and after several years' experience in a large wholesale firm in Toronto commenced business on his own account. He was elected a member of the legislative council for the Midland division of Canada in 1862, and held this seat until he was called to the Senate by royal proclamation in 1867. He was prominently identified with many public institutions, notably as president of the Canadian Bank of Commerce, member

of the senate of the University of Toronto, chairman of the Canadian board of the Great Western Railway and became widely known by his liberal donations to educational and religious institutions, especially those of the Baptist denomination, of which sect he was a member. McMaster University, Hamilton, is named in his honor.

**McMASTER UNIVERSITY**, Hamilton, Canada, established in 1887 through the generosity of Senator William McMaster (q.v.) and by a charter from the Legislative Assembly of Ontario, is ultimately controlled through the Baptist Convention of Ontario and Quebec, which elects the members of the board of governors, 16 in number, exclusive of the Chancellor. It occupies a site of over 90 acres, surrounded by extensive parklands at the western limits of Hamilton, but prior to 1930 was situated in Toronto, where its Arts faculty was opened in 1890. At present it has an endowment of \$2,250,000, owns five main buildings, and has a staff of 42 in two faculties, a library of 50,000 volumes, and an annual attendance of over 600, plus more than 350 part-time evening and summer students. A «Christian school of learning» the university has no sectarian tests for students, and requires only that instructors be members of an evangelical Christian church. The present university grew directly out of the Canadian Literary Institute, established in 1857 by Baptists of central Canada, in Woodstock, Ont., under the principalship of Rev. R. A. Fyfe, D.D. This co-educational school was set up by act of Parliament, and provided literary and theological courses. Arts studies were partially developed through temporary affiliation with the University of Toronto in 1875, and in 1881 the theological work was transferred to Toronto, where the Toronto Baptist College was established through gifts of Senator McMaster, whose later bequest of \$900,000 made possible the endowment of the new university in 1887. The college in Woodstock, changed into a boys' and young men's preparatory school, remained open until 1926, and a similar school for girls and young women, Moulton College, founded by Mrs. Susan Moulton McMaster in 1888, still operates in Toronto under the supervision of the McMaster Board of Governors. Matters of academic policy, including nominations to the faculty, are in charge of a Senate, which includes the governors, and representatives of the faculty and alumni, while the board of governors makes appointments to the staff and deals with finances and all questions affecting the corporation. The removal to Hamilton, and consequent enlargement of the McMaster constituency and resources, were made possible through generous gifts from graduates, members of Baptist churches, and interested citizens of Hamilton.

HOWARD P. WHIDDEN,  
Chancellor.

**MacMECHAN**, Archibald McKellar, Canadian scholar and author. b. Berlin (now Kitchener), Ontario, 21 June 1862; d. Halifax, N. S., 7 Aug. 1933. He was educated at the University of Toronto and at Johns Hopkins, and in 1889 was appointed professor of English language and literature at Dalhousie University, Halifax, N. S. He retained this position until shortly before his death. He published: 'The Relation of Hans Sachs to the Decameron';

*The Porter of Bagdad; The Life of a Little College; The Winning of Responsible Government, Sagas of the Sea; Headwaters of Canadian Literature; The Book of Ultima Thule; There Go the Ships, Red Snow on Grand Pre; Late Harvest*, a volume of poems appeared after his death.

**McMECHEN**, māk-mēk'ēn, W Va., city in Marshall County, alt 710 feet, on the Ohio River, 6m. S. of Wheeling. It is a residential town, with local industries. Near by, at Moundsville, is the Grave Creek Mound, one of the largest in the country, being 79 feet high and 900 feet in circumference. It was settled in 1823, incorporated in 1895, and has a mayor and council. Pop (1930) 3,710; (1940) 3,726.

**McMICHAEL**, William, American soldier and lawyer. b. Philadelphia, Pa., March 4, 1841; d. New York City, April 20, 1893. The third son of Morton McMichael, he graduated at the University of Pennsylvania in 1859, but left his law studies in April 1861, to enlist as a private. He attained rapid promotion to the grade of colonel. He resumed his law studies after the war and in 1865 became a member of the Philadelphia bar. During General Grant's first tenure of the presidency he was appointed solicitor of internal revenue of the Treasury Department, but resigned the office in 1871 on his appointment as United States assistant attorney general. In 1877 he was appointed United States district attorney for the east district of Pennsylvania, but resigned shortly after to go into private practice. President Garfield appointed him a member of the United States Board of Indian Commissioners; in 1882 he was a candidate for Congress on the Independent Republican ticket; and later became a member of the bar of New York City. Like his father, he was renowned for his oratorical gifts.

**MACMILLAN**, a name for many years prominently identified with English publishing interests. Most important was **DANIEL MACMILLAN**: b. Upper Corrie, Isle of Arran, Sept 13, 1813; d. June 27, 1857. He took service with a Cambridge bookseller in 1833, and with Seeley, Fleet street, London in 1837. He set up in business in London in 1843, but soon removed to Cambridge, and by 1856 had developed a very prosperous trade. He published Hughes' *Tom Brown's School Days* in 1857; but he was chiefly aided by educational publications, and the works of Kingsley and F. D. Maurice. Associated with him from 1843 was his brother, **ALEXANDER MACMILLAN** (b. 1815; d. 1896), previously a school-teacher at Nitshill, not far from Paisley. In 1863 he was made publisher to Oxford University and in the same year removed the business to London. *Macmillan's Magazine* made its appearance in 1859 and continued publication until 1907. The firm maintains a branch in New York and publishes many university and educational works, as well as considerable fiction, by American authors. Later representatives of the family were **SIR FREDERICK MACMILLAN**: b. 1851; d. June 1, 1936 (eldest son of Daniel Macmillan). He was chairman of Macmillan and Company, Ltd, from 1893, a director of The Macmillan Company, New York, and was president of the Publishers' Association of Great Britain, 1900, 1901, 1911, 1912. **GEORGE A. MACMILLAN**: b.

1855; d. March 3, 1936 (second son of Alexander Macmillan), was a director of both the English and American establishments of the firm. **MAURICE CRAWFORD MACMILLAN**: b. 1853; d. March 31, 1936 (second son of Daniel Macmillan) was also a director in both houses of the firm. Consult Hughes, *Memorials of Daniel Macmillan* (1882), *Life and Letters of Alexander Macmillan* (1910).

**MACMILLAN, SIR Daniel Hunter**, Canadian administrator: b. Whitby, Ontario, January 1846. He was educated in Canada and in 1864 served with the Canadian Volunteers on the Niagara frontier. He afterward took part in the military operations during the Fenian Raid in 1866, the Red River Expedition of 1870; and in the Northwestern Rebellion of 1885 he was awarded a medal. He was elected to the Manitoba legislature from Winnipeg in 1880, and became a member of the Manitoba government in 1889. In 1900-11 he was lieutenant governor of Manitoba and Keewatin. He was knighted in 1902, and formerly held the rank of lieutenant colonel in the Manitoba Grenadiers. Died April 14, 1933.

**MACMILLAN, Donald Baxter**, American explorer and scientist: b. Provincetown, Mass., Nov 10, 1874. He was graduated from Bowdoin College in 1898, and took post graduate courses in anthropology at Harvard. In 1908 he joined the Peary Arctic Expedition, which culminated in 1909 in the discovery of the North Pole. He was a member of the Cabot Labrador Expedition in 1910, and in 1911-12 did ethnological work in that region. MacMillan organized his first independent expedition in 1913. This had for one of its purposes the solution of the problem of Crocker Land, which Peary believed himself to have seen in one of his earlier expeditions. He remained in the Arctic regions until 1917, proving the nonexistence of Crocker Land, and exploring a large part of the hitherto unvisited Grant Land. MacMillan was appointed professor of anthropology at Bowdoin College in 1918, and in that year, and in 1919, served in the aviation branch of the navy. In 1920 he explored in the Hudson Bay region. In the next year he organized and commanded an expedition to Baffin Land, followed in 1923-24 by researches on the glaciers of Kane Sea, and in 1925 by an expedition whose chief purpose was to reach the North Pole by airplane. Commander Richard E. Byrd was in charge of the aeronautical part of the expedition. MacMillan visited Labrador and Greenland in 1926, and in 1927, 1929 and later organized expeditions to the North.

**MACMILLAN, SIR Ernest Campbell**, Canadian composer: b. near Toronto, Aug. 18, 1893. Dean of the faculty of music at the University of Toronto from 1927, principal of the Toronto Conservatory of Music from 1926, and conductor of the Toronto Symphony Orchestra after 1931. Dr. Macmillan was educated at Toronto and Edinburgh. From the age of nine onwards he made public appearances, and at the age of 13 was able to pass the examination for associateship of the Royal College of Music, and at 17 was graduated Mus B. at Oxford. In Germany at the outbreak of the World War of 1914-18 he was interned at Ruhleben and while there wrote a setting of Swinburne's *England*

which Oxford accepted for the degree of MusD in 1918. His works include *England: an Ode for Chorus and Orchestra*; *Sketches for String Quartette*; *Songs*; *Choral Compositions*; *Canadian Song Book*.

**McMILLAN, James William**, American soldier: b. Clark County, western Virginia, 1826; d. March 10, 1903. At the time of his death he was a member of the board of review of the Pension Bureau. Brevetted major general in March 1865, he commanded the 1st and 2d brigades of the 19th Army Corps and served with Butler in the Gulf campaign.

**MACMILLANITES**. See CAMERONIANS; PRESBYTERIANISM.

**MACMILLEN, Francis**, American violinist. b. Marietta, Ohio, Oct. 14, 1885. He entered the Chicago College of Music at the age of seven, afterward studying at Berlin, Brussels and Saint Petersburg, under Joachim, César Thomson, Flesch, Auer and others. He received first prize and the Van Hal cash prize at the Brussels Royal Conservatory when 16 years of age. He made his first public appearance in Brussels in 1903, afterward touring England, Belgium, France and Germany. He made his American debut at Carnegie Hall Dec. 7, 1906, and made concert tours of the principal cities of the United States.

**McMINNVILLE**, māk-mĭn'vĭl, Oreg., city and Yamhill County seat; alt. 154 feet; on the Yamhill River; 38m SW. of Portland. It is the trade center of a dairying, and fruit and nut raising area. Lumber, condensed milk, brick and tile, and gloves are manufactured. Linfield College, Baptist and coeducational is located here. W. T. Newby, a miller from McMinnville, Tenn., settled here in 1844 and named the town. Pop. (1940) 3,706.

**McMINNVILLE**, Tenn., town and Warren County seat, alt. 1,000 feet, 103m. by rail E. of Nashville. The region is agricultural, with some mineral and timber areas. The town has varied industries, producing tool handles, blankets, hosiery, and overalls. Settled about 1800, it was incorporated as a village in 1809, as a town in 1872. It has a mayor and council. Pop. (1930) 3,914; (1940) 4,649.

**MACMONNIES**, māk-mŭn'iz, Frederick William, American sculptor: b. Brooklyn, N. Y., Sept. 20, 1863. In his 17th year he became pupil and assistant to Augustus Saint Gaudens, and going to Europe in 1884 he studied at Munich, and later was admitted to the studio of Falguière at the École des Beaux-Arts, and also studied with Antonin Mercie; in 1887 opened a studio of his own in Paris. In 1889 his statue of *Diana* was honorably mentioned in the Salon, and his *Nathan Hale* in City Hall Park, New York, and *James S. T. Stranahan* in Prospect Park, Brooklyn, were much admired in the Salon 1891. His *Bacchante* (Salon 1894) was purchased for the Luxembourg. He was prolific in the creations of the chisel, and his work is to be seen in Washington Memorial Arch, New York City, in the statues of Prospect Park, Brooklyn, and the Battle Monument at West Point. He executed a number of statues for the Columbian Exposition in the Court of Honor (Chicago 1893). After 1900 he devoted himself more and more to painting, in which he exhibited

delicacy, freshness of design, and a brilliant technique. In 1913 he resumed his work in sculpture. He received numerous medals. In 1898 he was elected Chevalier of the Legion of Honor, and two years later won the grand prize at the Paris Exposition. He was a member of various national art associations. In 1919 he executed a colossal group, representing *Civic Virtue*, for New York City. D. March 22, 1937.

**MACMULLEN, Wallace**, American Methodist Episcopal clergyman: b. Dublin, Ireland, Aug. 31, 1860. He came to the United States with his parents in 1862 and was graduated from the Drew Theological Seminary in 1888, entering the Methodist ministry in that year. He was pastor at Springfield, Mass., in 1888-93; at Grace Church, Philadelphia, in 1893-98; at Park Avenue Church, Philadelphia, in 1898-1902; at the Madison Avenue Church, New York City in 1902-13. From 1913 to 1918 he was professor of homiletics at the Drew Theological Seminary, and from 1925 was pastor of the Metropolitan Temple, New York City. Author of *Captain of Our Faith* (1904).

**McMURRICH, James Playfair**, Canadian scientist: b. Toronto, Ontario, Oct. 16, 1859. Graduated from the University of Toronto in 1879, he received his Ph.D. from Johns Hopkins in 1885. From 1884-86 he instructed at that institution in mammalian anatomy. He held a professorship in biology at Ontario Agricultural College (1882-84); at Haverford (1886-89); at Cincinnati (1892-94). From 1889-92 he was assistant professor of morphology at Clark University; professor of anatomy in the University of Michigan (1894-1907), and afterwards was at Toronto University. He published *Invertebrate Morphology* (1894); *The Development of the Human Body* (1902). D. Feb. 10, 1939.

**McMURRY, Charles Alexander**, American educator: b. Crawfordsville, Ind., Feb. 18, 1857. He was graduated at the Illinois Normal University in 1876, at the University of Michigan in 1880 and at the University of Halle in 1887. He was principal of the Practice School at the Illinois State Normal University in 1899-1900; principal of the Practice School at the Northern Illinois Normal School in 1900-01; and after 1915 he was professor of elementary education at the George Peabody College for Teachers, Nashville, Tenn. Author *Method of Recitation* with his brother, F. M. McMurry (1898); *Special Method in Reading* (1898); and a series of textbooks including *Literature and History* (1898); *Geography* (1898); *Natural Science*, 2d ed. (1899); *Manual Arts: Arithmetic* (1906); *Teaching by Projects* (1919); *How to Organize the Curriculum* (1923). D. March 1929.

**McMURRY, Frank Morton**, American educator, brother of Charles Alexander McMurry (q.v.): b. near Crawfordsville, Ind., July 2, 1862. He studied at the universities of Michigan, Halle, Jena, Geneva and Paris. He was professor of pedagogy at the State Normal School, Normal, Ill., in 1891-92; and at the University of Illinois in 1893-94; professor of pedagogics and dean of Teachers' College, University of Buffalo, in 1895-98. In 1898-1926 he was professor of elementary education at Teachers' College, Columbia University. He was author of *Tarr and McMurry Common School Geographies*, with Ralph S. Tarr (1900); *Method of*

*Recitation*, with C. A. McMurry (1898); *How to Study and Teaching How to Study* (1909); McMurry and Benson, *Social Arithmetics* (1926). D. Aug. 1, 1936.

**McMURTRY, Lewis S.**, American surgeon: b. Harrodsburg, Ky., Sept. 14, 1850; d. Feb. 1, 1924. He was educated at Centre College, Kentucky, and at Tulane University. He specialized in gynecology and abdominal surgery, becoming professor of those subjects in the medical department of the University of Louisville, where he afterward became president of the medical faculty. He was surgeon at the Louisville City Hospital, and was president of the American Medical Association in 1906-07. He contributed to the *International Text Book of Surgery*.

**McNAB, Sir Allan Napier**, Canadian statesman: b. Niagara, Ontario, Feb. 19, 1798, d. Aug. 8, 1862. He entered the navy as midshipman in 1813, but soon abandoned the navy for the army; was present at the capture of Fort Niagara, and commanded the advance guard at the battle of Plattsburg. At the close of the war he studied law and practiced in Hamilton, and in 1829 was elected a member of the assembly, and speaker 1837-41. During the insurrection of 1837-38 he commanded the militia on the Niagara frontier, routed the insurgents near Toronto Dec. 7, 1837; and a party of American sympathizers having occupied Navy Island in the Niagara River, whence they were cannonading the village of Chippewa on the Canadian side, he sent a party to seize the steamer *Caroline*, employed to convey them supplies, and having driven the crew ashore, set fire to it and sent it over the Falls. For his services to the crown during this insurrection McNab was knighted. In 1854 he was prime minister under the earl of Elgin, retaining office for a few months under his successor, Sir Edmund Head. On retiring in 1856 he was made a baronet.

**McNAIR, mäk-när', Frederick Vallette**, American naval officer: b. Jenkintown, Pa., Jan. 13, 1839; d. 1900. He was educated at the United States Naval Academy and served in the *Minnesota* 1857-59. In 1861 he became lieutenant, and during the Civil War took part in the bombardment of Forts Jackson and Saint Philip, the capture of New Orleans and the destruction of the Confederate ram *Arkansas*. He was instructor at the naval academy 1867-68, in 1872 became commander and in 1887 was placed in command of the *Omaha* in the Asiatic squadron. In 1890 he became superintendent of the Naval Observatory. In 1895 he was made admiral, a member of the lighthouse board in 1898, and in July of the last-named year was appointed to take charge of Admiral Cervera and other Spanish prisoners of war. Upon their return to Spain he was appointed superintendent of the naval academy.

**McNAIR, Leslie James**, Lieutenant General of the United States Army; the Commanding General of the Army Ground Forces; according to General Marshall "the brains of the army"; killed in France in July 1944. Leslie McNair was born in Verndale, Minnesota, on May 25, 1883. He graduated from the United States Military Academy in 1904 and was com-

missioned a 2d lieutenant of artillery. On becoming a 1st lieutenant in 1905 he transferred to the Ordnance Department and was stationed at Sandy Hook Proving Ground, New Jersey, and later at Watertown (Mass.) Arsenal. In June 1908 he returned to field artillery and after four years went abroad to observe French artillery practice. From 1913 to 1916 he was at Fort Sill, Oklahoma, and then went to Mexico with General Pershing. In June 1917 he began a distinguished career in France on a staff with his friend George C. Marshall. He was promoted rapidly: lieutenant colonel 1917; colonel 1918; and at 35 years was the youngest brigadier general in the army. He earned the Distinguished Service Medal for skill in the use of artillery.

After the First World War he reverted to his permanent grade of major and during the next 15 years had various assignments: instructor, Fort Leavenworth; General Staff in Hawaii, professor of Military Science and Tactics at Purdue University; Artillery School, assistant commandant. He became a lieutenant colonel in 1928 and in 1935 as executive officer in the office of the Chief of Field Artillery was promoted to colonel. He was later commander of the 2d Field Artillery Brigade, Fort Sam Houston, and then commandant at the Command and General Staff School, Fort Leavenworth.

The big assignment came in July 1940 when as chief of staff, General Headquarters, he was charged with directing the gigantic training program. When the army was streamlined in 1942 he retained these duties becoming commanding general, Army Ground Forces, with rank of lieutenant general. His program included: factual training films; stiff obstacle courses, dangerous training under live ammunition maneuvers, realistic and tough. These he knew to be the only fit preparation for combat. Starting with about 1,000,000 men he finished with a trained army of nearly 8,000,000. In July 1944, satisfied that the job was done, he sought and received assignment to the field. Shortly afterward in France, while observing, he was killed by the unfortunate misdirection of one of his own army's bombs.

**MACNAMARA, Thomas James**, British statesman and author: b. Montreal, Canada, Aug. 23, 1861, d. Dec. 3, 1932. He went to England at an early age and was educated at Saint Thomas School, Exeter, and at the Borough Road Training College for Teachers. He was engaged in teaching in 1876-92 and was president of the National Union of Teachers in 1896. Elected to Parliament for North Camberwell in 1900, he served as parliamentary secretary of the Local Government Board in 1907-08 and to the Admiralty in 1908-15, in 1908-20 was financial secretary to the admiralty and minister of labor 1920-22. He was author of numerous textbooks.

**McNAUGHTON, Andrew George Latta**, Canadian soldier. b. 1887. Commander in chief of the Canadian Active Service Force from 1940. General McNaughton was educated at Lennoxville and at McGill University, the Royal Staff College, Camberley, and the Imperial Defense College, London. During the war of 1914-18 he served in France and Belgium; became chief of the Canadian General Staff in 1929 and was president of the National Research Council of Canada from 1935 to 1939. In 1930-40 he com-

manded the 1st Division of the Canadian Overseas Force.

**MacNEIL, Hermon Atkins**, American sculptor: b. Chelsea, Mass., 1866. He was graduated at the Massachusetts State Normal School in 1886; and later spent two years in study under Chapu at Julien Academy, and two years under Falguère at the École des Beaux Arts in Paris. He afterward taught for three years at Cornell, and three years also at the Art Institute, Chicago. He won the Roman Rhinehart scholarship in sculpture for 1896-1900. He was awarded the medal in design at the Chicago Exposition in 1893; received the silver medal at the Paris Exposition in 1900; the gold medal at the Buffalo Exposition in 1901; and the gold medal at the Panama Exposition in 1915. He was engaged in important decorative work for the expositions at Chicago, Paris, Buffalo and Panama. He executed the spandrels on the portico of the National pavilion at the Paris Exposition, where he exhibited the groups *The Sun Vow* and the *Last Act of the Moqui Snake Dance*. The main cascade fountain at the Saint Louis Exposition was his work, and he served on the jury of awards. Among his other work may be mentioned *The Coming of the White Man* (City Park, Portland, Ore.); *McKinley Memorial* (Columbus, Ohio); *General Washington* (Washington Arch, New York). His work is represented at the Art Institute, Chicago; Peabody Institute, Baltimore; Cornell University; the Metropolitan Museum, New York; and Johns Hopkins University.

**MacNEVIN, or MACNEVEN, William James**, American physician: b. Ballynahowne, County Galway, Ireland, March 21, 1763; d. New York, July 12, 1841. When 12 years old he was placed in the care of his uncle, Baron O'Kelly MacNevin, court physician in Austria, and he received his education at the universities of Prague and Vienna, taking his medical degree at Vienna in 1784. He then returned to Ireland and engaged in practice at Dublin. He was arrested with Thomas Addis Emmet in 1798 and imprisoned for four years; joined the Irish Legion under Napoleon and after three years came to the United States and practiced medicine. In 1808 he was professor of obstetrics in the College of Physicians and Surgeons and in 1811 professor of materia medica. He was author of *Rambles through Switzerland* (1803); *Chemical Examination of the Mineral Waters of Schooley's Mountain* (1815); *Exposition of the Atomic Theory of Chemistry* (1819).

**McNICHOLAS, (Rt. Rev.) John T.**, Roman Catholic bishop: b. Kiltimagh, Ireland, Dec. 15, 1877. He was brought to the United States in 1881, and educated at St. Joseph's College, Philadelphia; St. Rose College, Springfield, Ky., and St. Joseph's College, Somerset, Ohio. He was ordained priest in 1901; was lector of sacred theology, Minerva University, Rome, in 1904, and in 1904-05 was a professor at the Dominican House of Studies, Somerset, Ohio; at Washington, D.C., 1905-09; was pastor of St. Catherine of Siena, New York City, 1913-16, and archbishop of Cincinnati in 1925.

**McNUTT, Paul Vories**, American public official: b. Franklin, Ind., July 19, 1891. He graduated at Indiana University in 1913, received

a law degree from Harvard in 1916, and practiced law at Martinsville, Ind., becoming assistant professor of law at Indiana University in 1917 and dean of the law school in 1925. In 1933 he was elected governor of Indiana and served until 1937 when President Franklin D. Roosevelt named him as high commissioner to the Philippines, serving until July 1939, when he resigned to become federal security administrator, a new position in which he supervised the system of social security payments. In the First World War he was a major of field artillery and after the war commanding officer of the 320th Field Artillery. He received decorations from the governments of Poland and France, and was national commander of the American Legion 1928-29.

**MACOMB, Alexander**, American general: b. Detroit, Mich., April 3, 1782; d. Washington, D.C., June 25, 1811. He entered the United States Army in 1799 as a cornet of cavalry, and in 1812 held the rank of lieutenant colonel of engineers and adjutant general of the army. In January 1814 he was promoted brigadier general and placed in command of that part of the northern frontier bordering on Lake Champlain. At Plattsburg, on Sept. 11, 1814, he sustained the attack of a greatly superior British force under Sir George Prevost, which, after the defeat of the British squadron on Lake Champlain on the same day, retreated to Canada. For his firmness and courage on this occasion he was commissioned a major general, and received the thanks of Congress and a gold medal. In 1835 he succeeded to the office of commander in chief of the army, which he held until his death. He wrote a *Treatise on Marshal Law and Courts Martial, as Practised in the United States* (1809). Consult Richards, *Memoir of Alexander Macomb* (New York 1833).

**MACOMB, Ill.**, city and McDonough County seat, alt. 702 feet, 202m. by rail S.W. of Chicago, with an airport (privately owned). Located in a farming region, it makes porcelain electrical insulation, poultry equipment, pottery and stoneware, milk products, and automobile license plates. The public library is well-stocked. The city is the seat of the Western Illinois State Teachers College, with seven buildings on a 70-acre campus. Settled in 1830, Macomb was named for Gen. Alexander Macomb (q.v.), who commanded the United States Army from 1828 to the time of his death. It was incorporated as a town in 1830, and as a city in 1856; has a mayor and council, and a city-owned water-supply system. Pop. (1930) 8,509; (1940) 8,764.

**MACON, mā'kōn, Nathaniel**, American statesman: b. Warren County, N.C., Dec. 17, 1758; d. there, June 29, 1837. He was educated at the College of New Jersey, now Princeton; in 1776 he left college and served during the summer in the New Jersey militia. During the following three years he studied law; then from 1780 he served as a common soldier in the Continental Army till the provisional treaty of peace in 1782, refusing any pay or military distinction. When the Constitution of the United States was submitted to North Carolina, he opposed it, asserting it bestowed too much power on the government, and made it in effect independent of the state. He never lost this dislike of the Constitution, and had unlimited confidence in the capacity of the people for self-government;



his favorite saying being that «if left alone they would always do what was right.» He was a member of the United States House of Representatives 1791-1815, and in 1816 was elected to the Senate, where he served till 1828, when he resigned his seat, having been then a member of Congress for 37 successive years.

**MÂCON**, France, capital city of the department of Saône-et-Loire, on the Saône River, 45 miles north of Lyons on the Paris-Lyons Railway. A bridge of 12 arches crosses the river to the opposite suburb, Saint Laurent. The cathedral of Saint Vincent, built in the 12th and 13th centuries, was destroyed at the time of the Revolution, but a portion of it is still used as a chapel and the façade and towers remain. There is the modern church of Saint Pierre, a Romanesque structure with two fine spires and a three-naved basilica. Mâcon was the Roman *Matisco Eduorum* and in the 16th century was a stronghold of the Huguenots. It suffered severely in different invasions. It is the seat of a prefecture, and has tribunals of the first instance and of commerce. It has excellent schools and training colleges, and important commercial and manufacturing interests, as well as being a railway center. It has a large trade in wine, and manufactures supplies for the wine trade as well as being engaged in copper-founding, and making machinery, tools and paper. A statue in the town commemorates the birth there of Alphonse Lamartine, the poet. Pop. about 16,000.

**MACON**, Ga., city and Bibb County seat; alt. 337 feet; at the head of navigation of Ocmulgee River; 88m. SE. of Atlanta, on the Georgia; Central of Georgia; Southern; Georgia Southern; and Macon, Dublin and Savannah railroads, and federal and state highways; with the Herbert Smart Municipal Airport, 6½ miles east, served by Eastern Airlines. On the Dixie Highway, both north and south of the city, is a 'Memorial Mile' with bronze markers for World War dead of this county and plantings of spirea, crepe myrtle, and pecan trees. Palmettos and roses grow in profusion. The Bibb County Camellia Show and Bibb Flower Show are held each Spring. At Porterfield, a show place (8 miles south) with a Norman style farmhouse, are wonderful test gardens of roses. Peaches (blooming in late March and early April), vegetables, corn, watermelons, and cotton grow in the outlying country, which has pine forests and deposits of clay and kaolin. In Colonial times, Georgia kaolin was shipped to England for use in the Wedgwood potteries. On these natural resources of raw materials, and the power from the Ocmulgee's drop of 90 feet in the seven miles above the city, Macon's industries are based. Of a dozen cotton mills, the largest are Bibb (established in 1876), Atlantic and Willingham. Their varied products include yarn, twine, duck, tire fabric, hosiery, and underwear. There are several large cottonseed oil mills operated here. Gristmills, canneries (including pimento packing), slaughterhouses and tanneries have been less important than clay and kaolin products with raw materials especially from near-by Dry Branch and Jeffersonville. Lumber, sash and doors, crates and baskets, furniture, and creosoted timber have a high product value. Sawmill equipment is a feature of the machine shops, and most of the railroads that enter Macon have shops here. A large circus

and some racing stables make this their winter quarters. Macon is an important shipping point, and has a large wholesale trade.

The city is governed by a mayor and council of 12 aldermen. In 1911 the state legislature authorized it to own and operate the waterworks and to introduce a civil service system for police and fire departments. The City Hall (1836; remodeled 1935), in the prevailing Classic Revival style of the city, was the state Capitol for the last four months of the Confederacy, and it now houses the Historical Society and Art Association. There is an art room with Indian relics in the Municipal Auditorium (1925; 4,000 seats), which has a copper-covered dome 156½ feet in diameter. There are historical murals in this auditorium, in the Washington Memorial Library building (1919; library, 1874), and in the Citizens and Southern National Bank (1933). The city has its own stadium and several parks: Baconsfield along the river's left bank, faced by two large cemeteries on the right bank; Central City Park in the southeast, with grounds of the Macon professional baseball team (Peaches) and of the Georgia State Exposition (held in October); and in the southwest corner, Tattnell Square (18 acres). South of this square is the 63-acre campus of Mercer University (Southern Baptist), moved here in 1871 from Penfield. On the same College Street is Wesleyan Conservatory, music and fine arts department of Wesleyan College, chartered in 1836, the first institution empowered to give women degrees. It opened in Macon in 1839, but in 1928, all but the conservatory was moved to Rivoli, seven miles to the northwest, where a dozen Georgian Colonial buildings have been erected on a campus of 170 acres. Georgia Baptist College for Negroes (1889; coeducational) is five miles northeast of the city with a campus of 205 acres; 30 acres, formerly belonging to the College, are now a Macon recreation park. The Georgia Academy for the Blind, two miles west, was started by private gifts in 1851 and taken over by the state in 1852; the present building was erected in 1906.

Macon is the birthplace of Sidney Lanier, poet and musician, and Georgia's best known man of letters. The Lanier home is marked with a marble tablet, set into a terrace. Several residences are good examples of the Classic Revival: the Baber House, built before 1840, owned for a time by Mrs. Howell Cobb, and used since 1920 as a clinic; the Cowles-Walker House (1830), now owned by Scottish Rite Masons; the Cowles-Bond-O'Neal (1836); the H-plan Coleman House, similar to Stratford Hall in Virginia (1840); and the particularly fine Ralph Small House (1846).

The Macon area is full of prehistoric remains representing several stages of Indian culture. Just outside the city on the southeast is the Ocmulgee National Monument, with a million-dollar fund, the largest archeological research area in the United States. In the farther part of the Monument, the Lamar Mounds and Village Site have one conical and one pyramidal mound, both apparently temple sites, and traces of houses 20 to 25 feet square, which had thatched cane roofs covered with clay and puddled clay floors. The pottery found here is glossy with paddle-marked designs. Nearer the city is the Macon Plateau part of the Monument; it has four mounds, a council chamber 42 feet

in diameter with 50 clay seats around the wall, a prehistoric cornfield better preserved than any elsewhere. One of the plateau mounds was decorated on its sides and top with bright colored clay bands, yellow, blue and red. There are other interesting Indian remains in Brown's Mount, which has a smaller council room with built-in seats, and Shell Rock Cave, where red flint and jasper implements occur, and many marine fossils.

By 1805 the Indians had ceded to the state all the land between the Oconee and the Ocmulgee. A military post, Fort Hawkins, was built on the east side of the Ocmulgee in 1806 (The spot is marked by a blockhouse put up in 1938). Here troops gathered for Jackson's southern campaign in the War of 1812; and here came the first settlers from North Carolina in 1818. They called the place Newtown. After the Indians ceded (1821) to the state the lands west of the Ocmulgee, a settlement across the river in 1823 was named in honor of the North Carolina patriot, Nathaniel Macon. Two years later when LaFayette visited it, there were 700 inhabitants. In 1829 Newtown became a part of Macon. In 1832 Macon became a city and was an important point for shipping cotton downstream to Darien by oared flatboats. In 1833 the first steamboat carried cotton. In the next decade a railroad to the south connected Macon with Savannah, and one to the north from Macon had given Atlanta its start. Soon railway bridges blocked river traffic above the city. In the 1850's Macon grew rapidly and made bids for direct trade with Europe. In 1860 it held its Belgian Fair and Cotton Planters' Exposition. In the Civil War it was important to the Confederate cause as a gold depository, a center for commissary supplies, and one of Georgia's four munition-making cities. In 1864 it was threatened, but not taken, by Union forces; and it was finally occupied only after the armistice in April 1865. In the '70s the first large-scale textile mills were built. In the Spanish-American War one of Georgia's six training camps was here; in the World War, Camps Harris and Wheeler; and in 1941, Camp Macon, the second largest in the state. In 1906 the levee was improved and flood danger minimized.

The Macon *Telegraph* was founded in 1826, first published as a daily temporarily in 1831, and in 1865 cost \$120 (Confederate) for a year's subscription. An evening paper (1884) and a Sunday edition (1930) are under the same management as the *Telegraph*. The *Wesleyan Christian Advocate* moved to Macon from Charleston, S. C., in 1865. WMAZ, local broadcasting station, is one of the oldest in the state. In 1900 almost half the population was Negro; in 1930 about 45 per cent. The population from 1890 to 1940 increased more than 150 per cent, 1900-10 being the decade with the largest relative and actual growth, as some suburbs were annexed then: (1920) 52,995; (1930) 53,829; (1940) 57,865. Consult 'The Macon Guide and Ocmulgee National Monument' (Macon, 1939), a Federal Writers Project, sponsored by the Macon Junior Chamber of Commerce.

**MACON**, Miss., city and Noxubee County seat, alt. 179 feet, on the Gulf, Mobile and Ohio Railroad and on state and federal highways, 108m. NE. of Jackson. Industries: cotton and lumber. Government: mayor-council. The city has a WPA library and a hospital. It was in-

corporated in 1836. During the Civil War, Macon was for a while seat of the state government. Pop. (1940) 2,261.

**MACON**, Mo., city and Macon County seat; alt. 874 feet; 170m. NW. of St. Louis; on the Burlington, and the Wabash railroads. It is a shipping center for the agricultural products of the surrounding area, and for livestock. Grains are the principal crops. The city, situated in a grove of maples, has a public library. There is in Macon an osteopathic sanatorium, two of whose founders were sons of Dr. Andrew Taylor Still (q.v.), founder of osteopathy. Dr. Still was born in Virginia, but spent many years at Kirksville, in Adair, the county adjoining Macon on the north, working out his theory of drugless healing. In 1892 he established there what is now the Kirksville College of Osteopathy and Surgery. The sanatorium at Macon specializes in osteopathic treatment of nerve diseases. The town of Macon was founded in 1856. It and the adjoining town of Hudson were merged in 1859 to form the present city, and became the county seat in 1863. Pop. (1930) 3,851, (1940) 4,206.

**MACORIS**, ma'kō'res', Santo Domingo, seaport on the southern shore of the island of Haiti on Macoris Bay, about 40 miles east of Santo Domingo. The manufacture of sugar and a considerable import and export trade constitute the town's chief activities. A United States consular agent is located here. Pop. about 7,000. Macoris is also the name of a smaller town in northern Santo Domingo, near Santiago.

**MACOUN**, ma-koon'. John, Canadian botanist: b. Ireland, 1832; d. 1920. He removed to Canada at 18 and from 1868 to 1879 was professor of botany and geology in Albert College, Belleville, Ontario. In 1882 he became botanist to the Geological and Natural History Survey of Canada and was appointed in 1887 assistant director of the survey. He has published 'Manitoba and the Great Northwest' (1882); 'The Forests of Canada and Their Distribution' (1895); an exhaustive report on the Yukon country; and catalogues of Canadian plants and birds.

**MACPHAIL**, Sir Andrew, Canadian physician and editor. b. Orwell, Prince Edward Island, 24 Nov. 1864; d. 23 Sept. 1938. Educated at the Prince of Wales College, McGill University and at the London Hospital. He was principal of the Fanning Grammar School in 1882-85; was engaged in journalism in 1889-93; afterward traveling in the East. In 1895-1906 he was pathologist to the Western Hospital and Verdun Hospital for Insane. In 1907-37 he was professor of the history of medicine at McGill University. Author of 'Essays in Puritanism' (1905); 'The Vine of Sibmah' (1906); 'Essays in Fallacy' (1910); 'The Book of Sorrow' (1916); 'Official History of the Canadian Forces in the World War.' He was knighted in 1918.

**MACPHEE**, John Joseph, American neurologist: b. Canada, 8 July 1860; d. New York, 18 Feb. 1941. He was educated at the Prince of Wales College and at the University of Vermont where he took his M.D. in 1890. He was pathologist at the Post-Graduate Medical College of New York in 1891-94; after which he became professor of nervous and mental diseases at the New York Polyclinic Medical School and Hospital. He was also consulting neurologist at Saint John's Hospital, Brook-

lyn; Beth Israel Hospital, New York; and at Saint Francis' Hospital, New York.

**MACPHERSON**, māk-fer'son, Sir David Lewis, Canadian statesman b Inverness, Scotland, 12 Sept 1818; d 16 Aug 1896. He was educated at the Royal Academy in his native town, removed to Canada in 1835 and after becoming in 1842 a partner in a forwarding firm in Montreal secured in 1851, with others, a charter for a railway from Montreal to Kingston, the beginning of the Grand Trunk Railway. In 1872 he became president of the Inter-oceanic Railway Company, the rival to the Canadian Pacific, in competing for the transcontinental railway charter. He sat in the Legislative Council of Canada 1864-67, and in the last-named year entered the Dominion Senate and was elected its speaker in 1880. He was Minister of the Interior 1883-85 and was created KCMG in 1884.

**McPHERSON**, Edward, American journalist b Gettysburg, Pa., 31 July 1830; d. there, 14 Dec. 1895. In 1848 he was graduated from the University of Pennsylvania, and although he studied law soon gave it up for journalism. He sat in Congress 1858-66, was clerk of the House of Representatives 1868-73, 1881-83, and 1889-91, in 1876 permanent president of the National Republican Convention, and was chief of the Bureau of Engraving and Printing in Washington 1877-88. He edited the *Philadelphia Press* 1877-80, was for some years the American editor of the 'Almanach de Gotha'; edited from 1872 a biennial 'Handbook of Politics'; and the 'New York Tribune Almanac' from 1877 till his death. He was the author of a 'Political History of the United States during the Great Rebellion' (1865); and 'The Political History of the United States during Reconstruction' (1870).

**MACPHERSON**, James, Scottish author and translator b. Inverness-shire, 1736; d. 1796. He studied at Aberdeen and Edinburgh. Having published 'Fragments of Ancient Poetry,' translated from the Gaelic or Erse language, a subscription was raised to enable him to collect additional specimens of national poetry. He produced, as the fruit of his researches, 'Fingal, an Ancient Epic Poem,' translated from the Gaelic (1762, quarto); 'Temora and other Poems' (1763), professedly translated from originals by Ossian, the son of Fingal, a Gaelic prince of the 3d century, and his contemporaries. The question of the poem's authenticity gave occasion for violent controversy. It may be concluded that Macpherson's prose epics were founded on traditional narratives current in the Highlands; but the date of the oldest of the lays is comparatively modern, and it is now impossible to ascertain the precise extent of his obligations to Gaelic bards. Macpherson himself never made any serious attempt to vindicate himself against the charge of forgery. He had a life allowance from the government, and was agent to the Nabob of Arcot, having also a seat in the House of Commons, 1780-96. He was also the author of a very inadequate prose translation of Homer's 'Iliad' and of some other works.

**McPHERSON**, James Birdseye, American soldier b. Clyde, Ohio, 14 Nov. 1828; d. Atlanta, Ga., 22 July 1864. He was graduated

from West Point in 1853. Appointed brevet 2d lieutenant of engineers, he was assistant instructor of practical engineering at West Point, 1853-54, and after serving on fortifications and construction duty on the defenses of the harbor of New York and the improvement of the Hudson River (1854-57), was given charge of the construction of Fort Delaware (1857-61) and of the defenses of Alcatraz Island, San Francisco, Cal. He applied for active employment in the field at the opening of the Civil War. In May 1862 he was appointed brigadier-general of volunteers and was with Halleck at the siege of Corinth. For his services on this occasion he was made major-general of volunteers in the following October. He took an important part in the siege and capture of Vicksburg and was in consequence promoted to brigadier-general in the regular army, 1 Aug. 1863. In March 1864 he was made commander of the Department and Army of the Tennessee and performed distinguished services in the campaign of Georgia. In the following July he commanded in the engagement around Atlanta and was killed during a reconnaissance. A statue has been erected in his honor at Washington, D. C., by the men who fought with him in the Army of the Tennessee.

**McPHERSON**, Kans, city and McPherson County seat; alt. 1,480 feet; on the Chicago, Rock Island and Pacific; Union Pacific; Missouri Pacific; and Santa Fe railroads; about 128m. SW. of Topeka. Oil and gas were discovered in 1929 and there are oil refineries, plants recovering gasoline from natural gas, and oil field supply houses. Wheat and corn are raised near by. The chief industries include flour and feed mills, a cheese factory, and cement mills. McPherson College (q.v.), Central Academy and College, a Carnegie library and McPherson College Library and Museum are among the city's educational facilities. The city is named for the Civil War leader, Gen. J. B. McPherson (q.v.). Pop (1940) 7,194.

**McPHERSON COLLEGE**. This institution was established in McPherson, Kansas, in 1887, and opened its doors for the first time on 5 Sept 1888. Dr. S. Z. Sharp was the chief promoter of its founding. The college is the property of the Church of the Brethren (sometimes called Dunkards) and the control is exercised by a board of trustees representing the 16 church districts which make up Kansas, Nebraska, Missouri, Oklahoma, Colorado, Iowa, Minnesota, North Dakota, Idaho, Texas and Louisiana. A local executive committee consisting of the president of the college and 5 trustees selected by the board of trustees at large, actively supervise the work of the college between meetings of the board. While the college is affiliated with the Church of the Brethren no religious tenets are required for admission. The annual enrolment in all departments is between 500 and 550. It offers courses leading to the A. B. and B. S. degrees. The college is co-educational. The chief emphasis is on the liberal arts, but it also offers work in music, manual arts, commerce and home economics. The college has a strong faculty and a modern curriculum. The endowment assets are \$302,442.74, the value of the buildings and grounds is \$492,604.48. The college has a church constituency of nearly twenty-one thousand. The college plant consists of 15 acres of campus and

In 1841 he became a theatre manager of Drury Lane, but met with no success, so that he resigned at the end of the second season. His managership at Drury Lane had brought upon him considerable financial loss, to repair which he made his third visit to America (1848-49). There he was involved in an unfortunate quarrel with the American actor, Forrest, which in May 1849 culminated in a riot at the Astor Place Opera House, New York, at which Macready was appearing as Macbeth, and in consequence was obliged to leave the country. On his return to London he gave some farewell performances, and then retired from the stage in 1851.

**McREYNOLDS**, māk-rēn'oldz, **James Clark**, American lawyer, cabinet officer and jurist: b. Ellettsville, Ky., 3 Feb. 1862. He was graduated at Vanderbilt University in 1882 and from the law department of the University of Virginia in 1884. He engaged in law practice at Nashville, Tenn., attaining a distinguished reputation; and in 1900-03, without relinquishing his practice, he was professor at the Law School of Vanderbilt University. While of Democratic party affiliations he was appointed Assistant Attorney-General under the Roosevelt administration in 1903-07, after which he engaged in law practice in New York. He was on several occasions retained as counsel by the United States in service connected with the application of the anti-trust laws, his part in dealing with the tobacco trust and with the anthracite coal dealers and the railroads being especially prominent. In 1913 he was appointed United States Attorney-General by President Wilson, succeeding Attorney-General Wickersham. While in office the cases of the Union and Southern Pacific Railroad merger, the International Harvester Company, the American Telephone and Telegraph Company, the Reading Company and the New York, New Haven and Hartford, under the Sherman Anti-Trust Law, came under his direction. He was appointed associate justice of the Supreme Court of the United States in August 1914 and took his seat in October.

**MACROBIUS**, mā-krō'bī-ūs, **Ambrosius Aurelius Theodosius**, Latin author of the 5th century A.D. The country of his birth is uncertain, but it is inferred from the fact that he speaks of Latin as a foreign tongue to him that he was probably a Greek. He was the author of a miscellaneous work entitled 'Saturnalia,' curious for its criticisms, and valuable for the light it throws upon the manners and customs of antiquity; a commentary on Cicero's 'Somnium Scipionis,' in two books, valuable for the exposition it affords of the doctrines of Pythagoras with respect to the harmony of the spheres; and a treatise, 'De Differentiis et Societatibus Græci Latineque Verbi.' Consult Von Jan, 'Macrobius'; and Eyssenhardt, 'Macrobi Opera'; also Wissowa, G., 'De Macrobio Saturnaliorum Fontibus' (Breslau 1880).

**MACROCOSM**. See MICROCOSM.

**MACROCYSTIS**, māk-rō-sis'tis, a genus of brown seaweed of the family *Laminariaceæ*, generally known as giant kelp. It is common throughout the southern temperate zone and along the Pacific Coast of the United States. It has a much-branched root from which rises

many filiform simple or branched stems without leaves below, but bearing numerous lance-like leaves above. The stems reach the greatest length known in the vegetable kingdom. Observations by Hooker near the Crozet Islands report specimens fully 700 feet long; and other authorities state that a length of 900 feet is sometimes attained.

**MACROTHERIUM**, a genus of extinct ungulate mammals, in some cases of gigantic size, found most completely in the Miocene deposits of Europe, but also known from China and western North America. It represents the primitive group *Ancylopoda*, which had a wide geographical range in the Miocene and Pliocene epochs when it became extinct. The structure of the curiously twisted feet so much resembles that of the ground-sloth that for a long time the macrotheres, as well as their companion, but more generalized, genus *Homalodontotherium*, were regarded as edentates. Consult Woodward, 'Vertebrate Palæontology' (1898).

**MACRURA**. See DECAPODA.

**McTYEIRE**, māk-tār', **Holland Nimmons**, American Methodist Episcopal bishop: b. Barnwell County, S. C., 28 July 1824; d. Nashville, Tenn., 15 Feb. 1889. He was graduated at the Randolph-Macon College, Virginia, in 1844, and in 1845 entered the ministry, joining the Virginia Conference. In 1846 he was assigned to Saint Francis Street Church, Mobile, Ala., and after serving in the churches at Demopolis, Ala., and Columbus, Miss., he was transferred to the Louisiana Conference. He was editor of the New Orleans *Christian Advocate* in 1851-58, and from 1858 until its publication was interrupted by the Civil War he edited the Nashville *Christian Advocate*. During the war he served as pastor of the church at Montgomery, Ala. He was elected bishop in 1866, and in 1873 he became president of the board of the newly-founded Vanderbilt University. He was senior bishop for some time before his death. Author of 'Duties of Christian Masters' (1851); 'Catechism on Church Government' (1869); 'Manual of Discipline' (1870); 'History of Methodism' (1884); 'Passing Through the Gates' (1889), etc.

**MACŪ**, māk'koo, a nomadic Indian tribe of the Amazon region. They range through northwestern Brazil, more particularly along the Rio Negro. They are of the lowest type of savages of South America, provide neither shelter nor clothing and plant no crops. They live by hunting and fishing, are hostile and apparently have no connection with other tribes. A report of their condition was made by Theodor Koch-Grünberg in 'Anthropos' (Vol. I, pp. 877-906, 1906).

**MacVEAGH**, māk'vā, **Franklin**, American cabinet officer, brother of Wayne MacVeagh (q.v.): b. near Phoenixville, Pa., 1837; d. 6 July 1934. He was graduated at Yale in 1862 and took his LL.B. at Columbia University in 1864. He was admitted to the bar in 1864; and in 1864-66 was engaged in practice in New York. His health failing he went to Chicago in 1866 and there engaged in the wholesale grocery business. After the great fire in 1871 he established the firm of Franklin MacVeagh and Company, wholesale grocers, and he also became connected with various banking and

manufacturing interests. He became president of the Citizens' Association of Chicago in 1874 and was largely responsible for many important reforms. He was Democratic candidate for United States senator against Senator Culom in 1894 but was defeated. From 1896 he was associated with the Republican party, and in 1909 he was appointed Secretary of the Treasury by President Taft, serving throughout the Taft administration. He was vice-president of the American Civic Association in 1905; served as president of the Chicago bureau of charities and of the Municipal Art League; and was a founder and member of the executive committee of the National Civic Federation.

**MacVEAGH, Wayne**, American lawyer and diplomat: b. Phoenixville, Pa., 19 April 1833; d. 11 Jan. 1917. He was graduated from Yale in 1853 and was admitted to the bar in 1856. He was district attorney of Chester County 1859-64, became prominent as a Republican leader, and conspicuous in his profession, and in 1870-71 was Minister to Turkey. He was an active opponent of "machine politics" and in 1872 led the Republican opposition to Simon Cameron, his father-in-law. He was chairman of the "MacVeagh Commission" sent by President Hayes to Louisiana in 1877 to act as the President's unofficial representative and aid in adjusting political differences there. He was Attorney-General of the United States, March to September 1881, and was Ambassador to Italy 1893-97. In 1903 he was chief counsel of the United States in the Venezuela arbitration before The Hague Tribunal.

**McVICKAR, William Neilson**, American Protestant Episcopal bishop: b. New York, 19 Oct. 1843; d. 28 June 1910. He was graduated at Columbia College (1865); and at the General Theological Seminary (1868). He was ordained deacon (1867) and priest (1868). Being elected coadjutor bishop of Rhode Island, 19 Oct. 1897, he was consecrated 27 Jan. 1898, and on the death of Bishop Clark, September 1903, succeeded to the see.

**MACWHIRTER, māk-wēr'ter, John**, Scottish landscape painter: b. Slateford, near Edinburgh, 27 March 1839; d. London, 28 Jan. 1911. He entered the Trustees' Academy, conducted by Robert Scott Lauder at Edinburgh, when 13 years of age, and at 15 made his first exhibition, 'Old Cottage at Braid,' at the Royal Scottish Academy. At 16 he began his annual tours of Europe in search of material for his canvases, his travels eventually covering all parts of Europe and the United States as well. In 1867 he exhibited six pictures at Edinburgh and was elected to the Royal Scottish Academy. He made his first exhibition at the Royal Academy, London, in 1865, and in 1869 he settled permanently in London. He painted some effective landscapes in California in 1877; was elected associate of the Royal Academy in 1879 and Academician in 1893. His landscapes are naturalistic and their popularity doubtless was enhanced by the tinge of literary significance he succeeded in giving them, together with a certain felicity in the selection of their titles. Among his work are 'The Lady of the Woods' (1876); 'The Three Graces' (1878); 'The Lord of the Glen' (1880); 'The Three Witches' (1886); 'Crabbed Age and Youth'

(1899); 'The Fallen Giant' (1901). His work is represented in the Royal Academy diploma gallery; the Walker Art Gallery, Liverpool; and in the municipal galleries at Manchester, Dundee, Aberdeen and Hull. Author of 'Landscape Painting in Water Colors' (1901). Consult Spielmann, H. M., 'The Art of John MacWhirter'; Sinclair, W. M., 'John MacWhirter, R.A.' (*Art Journal Annual*, Christmas, 1903).

**MACY, Jesse**, American historian: b. Henry County, Ind., 21 June 1842; d. 2 Nov. 1919. He was graduated from Iowa College in 1870. From 1871 to 1885 he was principal of the academy of Iowa College, in 1883-85 was acting professor of history and political science; in 1885-1912 professor of political science, and professor emeritus since 1912. In 1913 he was Harvard Foundation lecturer in French provincial universities. He received the degree of LL.D. from Brown University in 1898, from Ginnell in 1911 and from Oberlin in 1915. He has written 'Civil Government in Iowa' (1881); 'Institutional Beginnings in a Western State' (1883); 'Our Government' (1886); 'A Government Textbook for Iowa Schools' (1887); 'The English Constitution' (1897); 'Political Parties in the United States, 1846-61' (1900); 'Party Organization and Machinery' (1904); 'Comparative Free Government,' with J. W. Gannaway (1915).

**MAD ANTHONY**, a nickname given to the Revolutionary general, Anthony Wayne (q.v.), on account of the seeming recklessness of his brilliant military feats.

**MAD APPLE**, the fruit of an American nightshade, especially that called Sodom apple (*Solanum sodomæ*), the eating of which produces poisonous intoxication.

**MAD MULLAH**, term applied to Mohammed Ali, the Mahdi, or Moslem Messiah: b. Somaliland, 1843; d. Omdurman, 22 June 1885. In his youth Mohammed was initiated into the mysteries of the occult sciences and sorcery. A study of the Koran and the Arab writings followed in the Marabout school. When quite young the future Mullah was taken with the idea of making the pilgrimage to Mecca, and not content with one journey made the sacred visit three or four times. After his last pilgrimage Mohammed returned to Berbera, but met with small success. Establishing himself in a powerful inland tribe, his ascetic practices and bold demeanor gained for him a reputation for sanctity and spiritual gifts. In 1880 he proclaimed himself Mahdi ("the guide," i.e., in the way of salvation), and in 1881 he proclaimed a Jihad or holy war against the infidel and speedily aroused all the latent fanaticism of the fierce Sudanese tribesmen. From 1881-83 he destroyed nearly every force sent against him; and so threatening did his power become that the evacuation of the Sudan was ordered by the Egyptian government. Wolseley's expedition for the relief of Khartum was too late to effect its purpose, the city was stormed in January 1885 and General Gordon murdered. His death is said to have occurred through poison administered at the hands of a woman he had outraged. His successor, Abd-Allah, carried on the struggle, until the power of Mahdism was finally broken at the battle of



Omdurman in 1898 Consult Darmesteter, *The Mahdi* (London 1885), Hoffmann, *Mahdithum* (Kiel 1899), Muller, E., *Beitrage zur Mahdilehre des Islams* (Heidelberg 1901); Wingate, *Mahdism and the Sudan* (London 1901).

**MAD TOM**, local name in eastern United States for any of several types of small catfish native to fresh waters. They are long and slender, with mottled skin entirely naked, and have sharp pectoral spines with which a wound about as painful as a bee-sting may be inflicted. There are several varieties, ranging from a few inches to nearly a foot in length. They are known also as stone-cat, owing to their resemblance to the rocky or pebbly bottoms they frequent.

**MADACH**, mō'dách, Emerich, or Imre, Hungarian poet: b Also-Sztregova, Jan 21, 1823, d there, Oct 5, 1864. He studied Law, was a notary in his native country and was also active as an orator and journalist. He wrote on archaeology and aesthetics, and both lyric and dramatic verse. His principal works are the two dramatic poems *Moses* (1860); and *The Tragedy of Man* (1860). The latter owes much to *Paradise Lost*, and to *Faust*, but is yet a remarkable performance. Though strongly contemplative in character, it was successfully presented. There is an excellent rendering in German by von der Lech (1888).

**MADAGASCAR**, mād-ā-gās'kēr, an island in the Indian Ocean, since 1896 a French colony. It is separated by the Mozambique Channel from the southeast coast of Africa, the nearest point being 240 miles distant. It is 980 miles long from Cape Sainte-Marie in the south to Cape Amber (Ambre) in the north, and has an average breadth of 250 miles; greatest breadth 360 miles; total area 228,500 square miles; population (1946 census) 4,058,281. Exclusive of Australia and Greenland, generally classed as continents, it is the third largest island in the world, only New Guinea and Borneo being larger. For administrative purposes, the Comoro Archipelago (q.v.) with several other islands lying adjacent to Madagascar, such as Nossi-Bé and Sainte-Marie, the islands of St Paul and Amsterdam in the South Indian Ocean, and certain Antarctic islands, are considered dependencies of Madagascar.

The principal towns of Madagascar are the capital, Tananarive, or Antananarivo (pop. 170,000), in the interior, Tamatave (21,000), the largest port on the east coast; Majunga, Fianarantsoa, Diégo Suarez, and Antsirabe.

**The Land.**—Madagascar consists of an elevated region with an average height of from 3,000 to 5,000 feet overlooked by mountains rising in some cases to over 9,000 feet above sea level. This plateau occupies a much larger proportion of the surface in the north and east than in the west and south; the greater portion of the island south of latitude 23° belongs to a much lower region which does not consist entirely of plains, but is interrupted toward the west by three prominent chains of hills stretching from north to south, one of them apparently in a continuous line about 600 miles in length. The coast has a number of indentations, mostly small, but a few good harbors, being in great part rock,

though in some places low and sandy.

The rivers are numerous, but few of them offer the advantages of internal navigation. The chief waterways are on the west and northwest side of the island. The Betsiboka with its affluent, the Ikopa, together measuring 300 miles, may be ascended by light steamers for 100 miles; the Tsiribihina has a somewhat shorter course, but drains by its numerous tributaries a much larger area. The eastern rivers descend from the high land through magnificent gorges, forming a succession of rapids and cascades, the falls in some instances having a descent of 500 feet. There are few lakes of any size as yet known to explorers; one of the largest is Lake Alaotra, measuring 25 miles in length, the others do not reach a length of 10 miles. A chain of lagoons linked by the Pangalane Canal, forms a waterway a short distance inland from the eastern seaboard, extending from Foulpointe to Farafangana (390 miles).

Geologically the elevated region consists almost entirely of granite and other igneous rocks, while the lower region is composed chiefly of secondary formations. The former region is traversed by a line of extinct volcanic craters, some of which show signs of comparatively recent activity. Among the more remarkable fossils are remains of a huge struthious bird, the *Aepyornis*, whose egg, measuring 12 by 9 inches, is larger than that of any other known bird. Minerals include copper, nickel, lead, iron, gold, large deposits of high carbon content graphite, mica, and numerous precious and semiprecious stones. Coal is found in the west both in the northern and southern parts of the island.

**Climate.**—The climate is varied; the heat on the coast is often very intense, but on the highlands of the interior the temperature is moderate. The coastal climate is tropical. In the interior the winter is dry and agreeable. The greatest amount of rainfall occurs on the east coast, and especially on the northeast, the part directly exposed to the summer monsoon. The elevated region of the interior and the districts on the west coast are more suitable for Europeans, but owing to the large extent of marsh and lagoon on the east, malarial fever prevails, and is frequently fatal to natives from the interior as well as to Europeans. On certain days in August or September, there may be freezing temperatures in high plateaus but snow is unknown.

**The People.**—The inhabitants, known by the name of Malagasy, belong to the Malayo-Polynesian stock and speak a Malayan language. They appear to form substantially a single race, though they have received a considerable intermixture of African blood and a certain amount of Arab intermixture. They are divided into numerous tribes, each having a distinctive name and custom. The Antaimorina (commonly called Hovas) are the predominant tribe; their proper country is the elevated region of the interior, but they extended their sway over nearly the whole island. They were socially divided into three classes: Andiana or nobles; Hovas (in a special and restricted use of the word) or free commoners; and Mainty or slaves. The nobles and slave classes have been abolished by the French. Among the other chief tribes are the Betsimisaraka on the east coast, the Betsileo in the south central region, and the Sakalava on the west and north. In the coast districts the houses of the better class are built of framed

timber with lofty roofs covered with shingles or tiles; the dwellings of the lower classes are constructed of bamboo or rushes, even of clay. In former and more unsettled times the villages were almost always built on the tops of hills, but during the 19th century this precaution was not deemed so indispensable. The principal article of native dress with both sexes is the *lamba*, a piece of cloth about three yards long and two broad, which is folded around the body under the arms, one end being thrown over the shoulder.

**Flora and Fauna.**—The most striking feature in the vegetation was formerly a belt of dense forest on the east and west of Madagascar. But forest areas greatly decreased during the last century, the high plateaus in particular being almost denuded. There is some virgin forest in Maroansetra and conservation measures are enforced. The stands include many species of lofty palms, hardwooded exogens supplying a great variety of beautifully veined and durable timber, and a large number of trees remarkable for the splendid character of their blossoms. Of all the trees of Madagascar, the most striking is the *Ravenala* or traveler's tree (*R. madagascariensis*). It resembles a palm, its stem being crowned by a semicircle of oblong leaves spread out vertically in a fan shape. It owes its name to the fact that the traveler may supply himself with water by piercing or breaking the lower ends of the leaf stalks.

Madagascar has a singularly local fauna which, although upon the whole related to Africa, is so peculiar to itself that, with a few neighboring islets, it forms a very distinct sub-province of the African region. Its characteristics show plainly that the separation of the island from the continent occurred at a very ancient time. Another singular feature is the presence of various forms of animal life represented elsewhere only in Oriental Australian regions; in a few animals, there is a marked resemblance to South American species (for example, the boas). From this fact it has been argued that in early Tertiary times there was a land connection between Madagascar and India and the region thence to Australia, now presented only by the islands of the Malayan Archipelago. (See LEMURIA.) In its mammals, Madagascar is singular in what it lacks, as well as in what it possesses. It has none of the cattle, equine animals, elephants, rhinoceroses, hogs, or even rodents of Africa, except a mouse or two; no lion or true cat or dog of any kind; and no monkeys. On the other hand, it has several small insectivora, closely allied to tropical American species; the great majority of all the lemurs, the few outsiders being in Africa and the Orient; and several viverrine quadrupeds, which take the place of the predatory cats. The modern birds are less striking in their peculiarities, but in the zoological era immediately preceding the present, the island possessed those huge ratite birds, the *Aepyornis* and its relatives, which gave rise to the story of the roc. Many forms of huge land tortoises were also members of this singular fauna. The fishes, amphibians, reptiles and lower forms are largely peculiar.

Crocodiles are numerous in the rivers and lakes, and many species of lizards, chameleons and tree frogs abound in the forests. Among the insects are numerous brilliantly colored beetles, butterflies, moths, flies, locusts, and spiders, venomous species of the latter as well as

scorpions and centipedes being present. See also ZOOGEOGRAPHY.

**Agriculture.**—About 75 per cent of the 4,000,000 Malagasy inhabitants are farmers. Of the vegetable products grown for food, by far the most important is rice, the staple food of the country; next in importance come manioc or cassava, sweet potatoes, beans, tomatoes, groundnuts, and yams. Ginger, pepper, and indigo grow wild in the woods; cotton, sugarcane, coffee, tobacco, and hemp are cultivated. Humped cattle are found in immense herds, and form a large part of the wealth of the inhabitants, they appear to have been introduced from Africa at a remote period, as the fat-tailed sheep, goats, swine, and horses have been more recently. Under French administration agriculture and cattle raising have undergone considerable expansion. An important part has been played in the settlement of the island by colonists from France. Cattle breeding is especially important. About 1,500,000 hectares of land are under cultivation (1 hectare=2.471 acres).

**Industry and Trade.**—Graphite, raffia fiber, coffee, manioc, hides, sugar, cloves, vanilla, mica, and canned meats are exported. The chief imports are cotton goods, machinery, iron and steel, cement, fuel oil, and automobiles. Imports for 1946 were 1,352,000 tons valued at 2,121.6 million francs C.F.A. Exports: 132,900 tons valued at 2,777 millions. Mineral exports: 8,900 tons of graphite, also mica and quartz. Other exports included meat and manioc. Phosphate production ceased in 1939. Production of garnet and corundum for abrasives, and rock crystal used for optical supplies, has continued, but exports of precious and semiprecious stones were curtailed by World War II. In general, the Malagasy show much aptitude for the manual arts. As silversmiths, gunsmiths, carpenters, and shoemakers, they rapidly acquire the skill of Europeans. They also make hand-woven textiles, rabanna goods, fine lace, straw hats, and ceramics.

**Transportation and Communication.**—There are two main railroads on the island. One extends from Tamatave to Tananarive, 230 miles, with one branch line from Tananarive to Antsirabe, 98 miles, and another from Moramanga to Lake Alaotra, 105 miles. The second is the Fianarantsoa-East coast line, 100 miles in length, serving the Betsileo region. There are approximately 15,500 miles of roads on the island, and a network of local airlines, mail being carried by plane.

**Government.**—Madagascar is divided into five provinces and is administered by a high commissioner assisted by a government council. French decrees of October 1946 (modified in January and March 1947) instituted a Representative Assembly consisting of 36 members—15 comprising French citizens of the first electoral list, which includes some autochthonous voters; and 21, the second electoral list comprising Malagasy who do not have French citizenship status. Five provincial assemblies were established, elected on the basis of the double lists, with representatives of the second list in the majority. The provincial assemblies elect the members of the Representative Assembly. The elections of March 30, 1947, returned to the Assembly (for the second electoral list) 12 members of the Parti des Dëshérites Malgaches (favoring close ties with the French), and 9 of the

Democratic Movement of the Malagasy Renovation (desiring a free and independent Madagascar within the French Union). A Court of Appeal and tribunals throughout the provinces provide for native justice, while there are special courts for the administration of French justice.

**Education and Religion.**—In 1944, there were more than 250,000 children attending public and private elementary schools where the curriculum comprises academic and technical courses. Education is free and compulsory, and instruction in French is obligatory. Instruction is also given in higher schools in practical agriculture, industries, and medicine. Numerous Catholic and Protestant missions and mission schools have long been established; in 1895 it was estimated that there were 450,000 Protestants and 50,000 Catholics in Madagascar. The religion of the great bulk of the people is a kind of fetishism or worship of charms.

**History.**—Madagascar was known to the traveler Marco Polo at the end of the 13th century and had already been visited for several centuries by the Arabs. In 1506 it was visited by the Portuguese, who gave it the name of St. Lorenzo. A number of French settlements were formed, broken up, then re-established at various times, more particularly along the east coast at Sainte-Marie Island, Antongil Bay, Fort Dauphin, and Tamatave. British influence began to be felt after the Napoleonic wars.

Previous to 1810, Madagascar, which had no truly indigenous population, might be said to be divided among numerous tribes who remained almost constantly at war with one another. By the 19th century, the Hovas had gradually extended their supremacy over most of the island. While some of their rulers encouraged the infiltration of European ideas, others yielded to the pressure brought to bear by the Andriana nobles and gave proof of a fear and distrust of strangers which several times led to armed intervention by both the French and British. After several decades of rivalry, the British recognized France's larger interests and predominant rights in the island.

Radama I, a prince of remarkable intelligence, became king of the Hovas in 1810, and began to enforce by right of conquest a claim to the sovereignty of the whole island. He received arms and other assistance from the British, by which he was enabled to carry on his conquests. Christian missionaries began to teach in the capital in 1820. Many converts were made, the Bible was translated into the Malagasy tongue, the language was first reduced to a systematic written form, and printing was introduced. Great improvements had taken place in the manners of the people when Radama died in 1828, and was succeeded by his chief wife, Ranavalona I, a woman of cruel disposition, and opposed to all innovation. The native converts were persecuted, many of them being put to death, and the island was closed to Europeans. This reign of terror ended at last in 1861, when the queen died, and was succeeded by her son, Radama II, who, himself a Christian, reopened the island to European missionaries and traders, and proclaimed the emancipation of the African slaves. He appears, however, to have been a weak prince easily swayed by native and foreign favorites, and he made an unwise grant of extensive territories and privileges to an enterprising French company, an act which lost him the

affection of his nobles, and led to his assassination in 1863. His wife Rasoherina was placed on the throne, and the government repudiated the concessions made to the French, offering 1,000,000 francs as compensation. After a quiet and prosperous reign of five years, this queen died, and was succeeded by Ranavalona II in 1868. After she had been elected queen, she and a great number of her courtiers became Christians, and many reforms favorable to enlightenment and humanity were perseveringly carried out. She was succeeded in 1883 by Ranavalona III. The Sakalavas, a large tribe inhabiting the northwest of Madagascar, had previously asked to be placed under France's protection. Queen Ranavalona refused to recognize French interests in that part of the island and this led to hostilities in 1883-1885. The war was terminated by a treaty, under which France acquired protectorate rights over Madagascar, but hostile feeling toward the French again led to war in 1895. French forces soon quelled the insurrections and Madagascar was proclaimed a French colony (Aug. 6, 1896). In 1897 the queen was deposed and exiled, first to the island of Réunion and thence to Algiers where she died in 1917. Gen. Joseph Simon Gallieni was named French resident general (1896-1905) with full military and civil powers. He removed Hova governors from all regions inhabited by other tribes and rapidly brought peace to the island.

In 1941, fears were aroused in Great Britain by Japanese official statements concerning the possible occupation of Madagascar by Axis forces. A British expeditionary force established a control zone in Diégo Suarez, May 1941. Five months later they took control of the whole island, the pro-Allied French officials continuing their functions. In December 1942, the French Committee of National Liberation appointed a high commissioner for Madagascar and French sovereignty was restored.

Consult Howe, S. E., *Drama of Madagascar* (London 1938), Griffith, G., and Ronca, J., *Madagascar Adventure* (London 1939), Chapman, O. M., *Across Madagascar* (London 1943).

JEAN DE LA ROCHE,  
*French Colonial Administrator.*

**MADAME BOVARY.** The first and best-known novel of Flaubert, a type and model for the fiction of the next generation, was the first and is probably still the best of minute reproductions of the platitudes of modern life. *Madame Bovary* was published in 1856 when Flaubert was already 35, the fully matured and laboriously executed expression of his effort to make writing a means of emancipation from self. The French literary historian Gustave Lanson considered it "the masterpiece of contemporary fiction." Flaubert's own education had been out of key with his provincial surroundings, and he chose natives similarly out of tune with their environment for the first object of his study, with a painstaking accumulation of "significant little facts" quite in the spirit of Taine's psychology and literary criticism. Flaubert had worked on *Madame Bovary* at least since 1852, "eighteen hours out of the twenty-four," he tells George Sand; and adds, "I seek something better than success, I seek to please myself." The novel attracted immediate and wide attention, presently stimu-

lated by a prosecution of the author for alleged immorality, a celebrated case, ending in a curiously qualified acquittal. The court pleadings and judgment, printed at Flaubert's insistence with subsequent French editions of the novel, throw strange light on the moral ideas of the last decade of the Second Empire.

'Madame Bovary' marks the transition from the fiction of romantic fancy to that of close realistic observation, preferably of the petty, the puerile and the commonplace. The theme is the banality of provincial life, as Flaubert saw and felt it; the lesson is the futility and danger of a sentimental revolt from the commonplace when vulgar souls indulge in romantic aspirations. Briefly the story is this: Charles Bovary, a "medical man," though not an M.D., fatuously good, timidly banal, is shown us first as a dull pupil, then unsympathetically married, then a widower attracted to a farmer's daughter, Emma, the book's chief subject, whom he marries, apparently the less initiated of the two. Emma's convent education beyond her station had been supplemented by romantic poetry and fiction, in Flaubert's opinion a deliberate perversion, whose degrading and immoral results he proposes to show. Charles was happy; Emma ever restlessly reaching out toward a fulfilment of her romantic aspirations. Chance brought her to an aristocratic ball. Dormant emotions were awakened. "She desired at the same moment to die and to live in Paris." Léon, a law student, served her for a platonic attachment, presently to be succeeded by Rodolphe, after Emma had sought sentimental consolation in religion, quite in vain. Rodolphe's carnally-minded courtship, a bitterly ironically parody of romanticism, is successful; but from dreams of bliss Emma is relentlessly drawn down to and below the commonplace. Both weary, Emma again seeks refuge in religion, but meeting the now more sophisticated Léon yields once more, and plunges Charles into debt while still seeming to him more charming than ever, as she descends the last steps of dissimulated corruption. Abandoned by Léon, once more rejected by Rodolphe, she escapes life by poison, holding even beyond death the infatuated love of Charles, who, even though at last undeceived, dies with a lock of her hair in his hand.

Incidental to the story are some admirable character studies of provincial types, notably M. Homais, druggist-demagogue and materialist, incarnation for Flaubert of "triumphant democracy," a by-word for the narrow, provincial philistine, who has given his name to a social species. His counterfoil is the parish priest, Bourrisien, whose cure of souls is a perfunctory, well-meaning, uncomprehending fatuity. More subordinate but strongly individual are the sacristan Lestiboudois, the notary Guillaumin, and the merchant-money-lender Lhereux.

Apart from its subtle psychology 'Madame Bovary' won and holds admiration for its phrases of flashing irony, its vivid narration and fine descriptive passages, but no less for its linguistic euphony, a matter to which Flaubert gave untiring and at times almost morbid attention. Ethically it reflects its author's sombre pessimism. To Flaubert all spiritual aspiration seems foredoomed to failure. For himself he sought forgetfulness in the pursuit

of art for art's sake. In this book he presents neither a character to imitate nor an act to admire. Yet 'Madame Bovary' is, in Bouiget's phrase, "the very ideal of the literary artist." There are translations by W. Walton and others. Consult Whitehouse, H. R., 'The Life of Lamartine' (2 vols., New York 1919).

BENJAMIN W. WELLS,  
Author of 'Modern French Literature'

**MADAME SANS-GENE.** (1) The wife of Marshal Lefebvre, a laundress at the time of her marriage to the Marshal (then a sergeant), who was given the name, which means "care-free," because she retained the unconventional manners of her early life. (2) A play by Sardou and Moreau, first presented at Paris in 1893. The personages are Napoleon and the homely characters whom he made his courtiers. (3) An opera, first presented at the Metropolitan Opera House, New York City, 25 Jan. 1915.

**MADDER**, (1) in botany, the English name of the plants of the genus *Rubia*, especially *R. tinctorum*. It is a trailing or climbing annual, supporting itself by its leaves and prickles. It is supplied chiefly from Holland, France, Italy and Turkey. The roots are kindred and then threshed; they are then dried a second time, and afterward pounded and stamped in a mill. Indian madder, called also madder of Bengal, is *R. cordifolia*. (2) In chemistry, the root of *R. tinctorum* is extensively used in dyeing for the production of a variety of colors, namely, red, pink, purple, black and chocolate. Other species of *Rubia* are also used. It would appear that madder contains a colorific principle — rubian — which, under the influence of a peculiar ferment, termed erythrozym, breaks up into alizarin, purpurin, etc. The colors produced from madder are very stable, the well-known Turkey-red being one of them. Madder also contains certain yellow coloring matters, but they are useless, if not injurious, in the process of dyeing. (See DYES; DYEING). (3) In pharmacy, madder is a tonic, diuretic and an emmenagogue. Brown madder, a rich red-brown pigment, prepared from the roots of *R. tinctorum*.

**MADDOX**, Richard Leach, English physician and chemist. b. Bath, England, 4 Aug. 1816; d. Portswood, Southampton, 11 May 1902. He studied medicine at University College, London, but was graduated M.D. at Edinburgh. In early life he settled and practised his profession in Constantinople, and here first took up the study of photography. He subsequently left the Bosphorus for Smyrna and was a civil surgeon in the military hospitals at Scutari during the Crimean War, and finally settled at Woolston, near Southampton, England. It was during his residence at Woolston, which lasted until 1874, that he worked out the process which has revolutionized the art of photography, by substituting the gelatino-bromide for the collodion plate. With him originated the gelatino-bromide dry plates to take the place of the wet collodion plates which, besides other inconveniences, sometimes produce an atmosphere which is dangerous to the operator's health. There have been more than one claimant to the credit of this discovery, but it has been decided by the *Scientific American* that Dr. Maddox is entitled to all the honor of the invention.

**MADEIRA**, mə-dē'ra (Port. mǎ-dǎ-ē-ra), a group of Atlantic islands belonging to Portugal, opposite to and about 360 miles distant from Morocco, on the west coast of Africa and about 535 miles southwest of Lisbon. Madeira, the principal island, and the islets of Porto Santo, Dezerta Grande and Bugio, comprise the group with an area of 314 square miles, and a population of about 211,000. The main island (area, 300 square miles) consists of a collection of mountains of volcanic origin, the most elevated of which is upward of 6,000 feet high. Through the west half of the island runs a central ridge about 5,000 feet high, on which is an extensive plain called Paul de Serra. The east portion of the island, though elevated, is less so than the west. From the central mass steep ridges extend to the coast, where they form perpendicular precipices of from 1,000 to 2,000 feet high. These cliffs are indented by a few small bays, where a richly cultivated valley approaches the water between abrupt precipices, or surrounded by an amphitheatre of rugged hills. These narrow bays are the sites of the villages of Madeira. The most striking peculiarity in the mountain scenery of the island is the jagged outline of the ridges and the deep precipitous gorges which cut through the highest mountains almost to their very base. The road round the island is in many places exceedingly picturesque, being led often between lofty cliffs or along the front of precipices overhanging the sea. The Madeiras were known to the Romans under the name of *Purpuraria Insulae*. They were rediscovered by the Portuguese in 1420, and the name Madeira was given to the principal island from the magnificent forests of building timber (in Portuguese *madeira*) which then covered it. It was settled by the Portuguese in 1431. From 1580 to 1640 the islands, with Portugal itself, were under Spanish rule, and have twice (1801, 1807-14) been under the British flag. Funchal, the capital (pop. 24,687), is an episcopal see. The inhabitants are devout Roman Catholics. The mean annual temperature of Madeira is 65° and the climate, from its constant and temperate warmth, is well known for its favorable effects on those suffering from pulmonary and other complaints, which renders the island a favorite resort of invalids from Great Britain and elsewhere. Large and well-appointed hotels exist at Funchal. The islands are connected with Great Britain, France and Belgium, and with the United States, by steamship lines. The staple product of Madeira is wine, the quantity of which in good years prior to the appearance of the vine disease in 1852 amounted to 2,750,000 gallons. The annual export is now about 700,000 gallons. Sugar-cane, and the cactus for the rearing of cochineal, are cultivated, fruit and vegetables are grown, fishing is actively engaged in, linen, woollens, leather, straw hats, baskets, soap, sugar, spirits, butter, etc., are manufactured. The chief import is coal, the most important of the others being wheat, rice, Indian corn and dry goods.

**MADEIRA**, or **CAYARI**, Brazil, a large navigable affluent of the Amazon, about 800 miles long, formed by the united streams Beni and Mamore on the frontiers of Brazil and Bolivia. The length from the source of the Mamore is 2,000 miles.

**MADELEINE**, Marie Angélique, DE SAINTE, French abbess, prioress of the convent of Port Royal, Paris. See under baptismal name, ARNAULD, JACQUELINE MARIE.

**MADELEINE**, mad'lān', La, France, a prehistoric station in the valley of the Vézère, midway between Moustier and Les Eyzies. The Madelenian, or Magdalenian, Epoch was named from this cave by the French anthropologist, Gabriel de Mortillet.

**MADELEINE**, mad-lān, La, a church in Paris, in a square of the same name, commenced in 1764. It was remodeled and changed after the Revolution, and in 1832 was completed at a cost of \$3,000,000. The church is built in the form of a Roman temple and is 100 feet high, 354 feet long and 141 feet wide. The bronze doors by Triqueti are 35 feet high and 16 feet in width. The building, which has no windows, is lighted from above.

**MADEMOISELLE DE MAUPIN**, mō'-pān'. 'Mademoiselle de Maupin,' a novel written by Théophile Gautier when he was only 24 years of age (1835), expresses the most salient features of romanticism. In the somewhat long preface is found the key to the interpretation of this highly imaginative work. Gautier cries out against the shammed respectability of that period and condemns the prudish stand of literary critics who according to him are merely hypocrites actuated by envy. Violently opposed to classical traditions and ideas, Gautier, who had been trained as a painter, keeps in this work the painter's vision, and emphasizes primarily form and color, while defending art for art's sake. Digressions on the supreme value of beauty are found frequently throughout the pages, and the vivid imagination of the author is fruitful to the point of exaggeration. The heroine, brought up according to tradition, rebels against it, and, disguised as a man, like the Amazons of old, resolves to study life at first hand. After many unusual adventures she becomes for one day the long-sought ideal of a romantic poet who had searched in vain until then for the "woman" of his dreams and who found her only to lose her immediately. As a novel the work is crude both in subject matter and in development, showing that it comes from a young man whose passions were not yet calm. It is, however, essentially artistic; the style is full of color and abounds in beautiful descriptions and lyric passages. While the novel did succeed in amazing placid citizens and is still classed as dangerous reading, it must not be considered as a study of any type of French character, but as a flight of imagination, a descriptive fantasy artistically worked out by a talented writer of the Romantic school.

LOUIS A. LOISEAUX.

**MADERA**, Calif., city and Madera County seat; alt. 272 feet; 22m. NW. of Fresno; on the Santa Fe, and Southern Pacific railroads. It is in a lumber, and vineyard area. Pop. (1940) 6,457.

**MADERO**, mə-dā'rō, Francisco Indalecio, President of Mexico: b. San Pedro, Coahuila, 18 Oct. 1873; d. Mexico City, 23 Feb. 1913. He came of a wealthy family and was a grandson of a former governor of Coahuila. He was educated at a Jesuit college in Mexico and at the University of California and spent the years



1889-95 in France. He returned to Mexico, engaged in cotton-planting and in banking and materially increased his fortune. He took up his residence in Mexico City in 1900 and became keenly interested in political reform. Of a naturally retiring disposition, he displayed an initiative that surprised his most intimate friends, and by 1905 he was the unquestioned leader of the reform element. He actively opposed the rule of Díaz, and in 1908 he published his 'La Sucesión Presidencial en 1910,' a strikingly well-balanced attack on the evils existing in the political and social life of Mexico. He advocated suffrage reforms, a single term for the Presidency and opposed the absolutism which characterized the rule of Díaz, while crediting him with the many achievements of his administration. The book caused a sensation and was promptly suppressed by the government. However, Madero was nominated for the Presidency in 1910, running against Díaz on a platform advocating a single term for the Presidency. He was arrested on a fabricated charge in July 1910 and imprisoned until it was too late for him to interfere with the re-election of Díaz. Madero then headed a plot for a revolution against the government, advocating reforms in suffrage, land distribution, freedom of the press and the single presidential term among other measures. The uprising began at Puebla, 20 Nov. 1910, spread through Sonora and Sinaloa, and upon capturing Juarez, Madero set up his government and appointed a cabinet, 11 May 1911. The Díaz government then entered into a conference with the revolutionists and peace was declared 21 May. Madero was elected President 1 October. Temperamentally a dreamer and idealist, Madero found himself checked upon every hand in his attempts to carry his projected reforms into effect. He was unable to manage the politicians of the old régime, or the insurgent element, and in 1912 revolts broke out under Zapata in the south and under Félix Díaz, nephew of ex-President Díaz, in the north. He was charged with being slow and irresolute in his administration of public affairs, of favoring his relatives and of personal peculation from the public treasury. The Díaz revolution was suppressed and General Díaz was imprisoned. Madero, however, was of a forbearing disposition and suspended the death sentence pronounced against the revolutionist. An uprising among the soldiers in Mexico City took place 9 Feb. 1913 and released Díaz and another enemy of Madero, General Bernardo Reyes. The Federal troops for a time resisted the revolutionists but on 17 February General Blanquet with a force of 1,200 arrived in the city and joined General Huerta, Madero's commander-in-chief, in overthrowing the government. Madero was arrested and imprisoned 19 February and plans for his exile were under way when it was decided to bring him to trial. Together with the Vice-President, Pino Suarez, Madero was being conducted from the National Palace to the penitentiary when both were shot. No reports except those of the government were available and the official version was that an intervention in behalf of the prisoners was made by Madero sympathizers, whereupon the prisoners attempted to escape and were shot. Huerta was generally held responsible for their deaths and was eventually forced from office because of

them although he persistently denied complicity in the affair.

**MADHAVA**, ma'dha-va, another name of the Hindu god Vishnu (q v)

**MADIA OIL**, oil expressed without heat from the seeds of *Madia sativa*. It is transparent, yellow, odorless and may be used on the table as a substitute for olive oil or for oil-cake for cattle. The plant is a composite, native to southern South America, but has long been cultivated in Europe for its oil-bearing seeds.

**MADISON, James**, American Protestant Episcopal bishop: b Rockingham County, Va., 27 Aug. 1749; d 6 March 1812. He was graduated at William and Mary College in 1772, studied law and was admitted to the bar, but soon after abandoned law for divinity. In 1773 he was chosen professor of mathematics in William and Mary College, and in 1775 went to England and was admitted to orders by the bishop of London. In 1777 he was elected president of the college, and during the American Revolution succeeded in keeping the college in active operation. Having been chosen as bishop of Virginia he was consecrated by the archbishop of Canterbury, in Lambeth Palace, 19 Sept. 1790. He continued to discharge the duties of president of the college and professor of natural and moral philosophy, international law, etc., with those of the episcopate, until his death. His only publications were several occasional discourses and a 'Eulogy on Washington' (1800).

**MADISON, James**, fourth President of the United States: b. Port Conway, Va., 1751; d. Montpelier, Va., 28 June 1836. Madison was the eldest son of James Madison, a Virginia planter, and of Nelly Conway, daughter of Francis Conway, of King George County, Va. His father, a man of independent means, lived on an estate now known as Montpelier in Orange County. James was born at Francis Conway's home on the Rappahannock while his mother was on a visit to her parents. His educational advantages were excellent for the times; he attended the school of a Scotchman, Donald Robertson, was well prepared for college by the clergyman of the parish, the Rev. Thomas Martin, and entered Princeton in 1769. His application to his studies was excessive, and was in part the cause of later ill health; he succeeded, however, in taking the studies of the last two years in one year and took his B.A. degree in 1771. He remained at Princeton for another year doing special work in Hebrew under Dr. Witherspoon, the president. After his return home he tutored his younger brothers and began a systematic course of reading in theology, philosophy and law. At this time his study of Hebrew and theology seem to indicate a desire to enter the ministry, but he soon abandoned this and prepared himself for the legal profession and for public service. His theological studies bore good fruit later as is evidenced by the stand he took for religious liberty.

Madison was by instinct a politician and not a soldier; he took no active part in the Revolutionary War, but as early as 1774 he was appointed a member of the Committee of Public Safety for Orange County, and in 1776 was elected delegate to the convention which framed the constitution of Virginia. From that time

until he retired from the Presidency he was honored with high public offices by his State and by the nation. In the Virginia Convention Madison succeeded in substituting for a clause in the Bill of Rights permitting the "fullest toleration" in religion, a clause allowing the "free exercise of religion." This was a distinct blow to religious intolerance for, as he said, toleration implies jurisdiction, and the State should have no coercive power over religious thought. He was a member of the first Virginia assembly but failed of re-election because, as his biographer Rives tells us, he refused to conform to the universal custom of his day and "treat" his constituents; he was, however, made a member of the governor's council and so distinguished himself that in 1780 while still under 30 he was chosen as delegate to the Continental Congress. In this Congress he was conspicuous for his opposition to the issuance of paper money by the States; for his efforts to secure for Congress the right of taxing imports, and for his determined stand to retain for the States the right of navigation on the Mississippi. Madison saw clearly that a government so organically weak that it could not enforce its requisitions and could pay its debts only by increasing its debt could never be effective; hence he labored unceasingly to enlarge the power of the central government. The office of delegate was limited to one term, so Madison was not returned to Congress in 1784, but the high esteem in which he was held was shown by his immediate election to the State assembly. Virginia was a very influential State and her attitude toward national questions was of great importance. In the assembly Madison tried to indoctrinate the people of Virginia with his ideas concerning the Federal power. His bill to regulate trade in Virginia and to provide ports of entry led first to the conference between Virginia and Maryland with reference to trade on the Potomac and later to the Annapolis Convention which met in 1786 to consider the trade and commerce of the United States. This Convention at Annapolis urged upon the States the appointment of commissioners to meet in convention at Philadelphia "to devise such further government as shall appear to them necessary to render the Constitution of the Federal Government adequate to the exigencies of the Union." The summoning of the Philadelphia Convention was largely due to the wise bills introduced by Madison in the Virginia assembly and to his direction of public sentiment, and it was eminently fitting that he should be one of the delegates of the Virginia Commission at whose head was George Washington. Madison's views on government are clearly defined in his "outline system" which formed the basis of the Virginia plan proposed to the Convention. His system demanded that there should be a due supremacy of national authority without the exclusion of local authority, that the national authority should extend to the judiciary and to the militia; that the national legislature should be composed of two bodies, the larger elected for a short, the smaller for a longer term; that Congress should have certain coercive powers; that a national executive should be provided and that the basis of representation in Congress should be changed from States to population. The "Virginia plan" was the germ of the Constitution and Madison is

rightly called the "Father of the Constitution." His arguments in favor of the proposed government were exhaustive and convincing, and his private notes of the work of the Convention and of his debates purchased from his widow and published by Congress form a valuable addition to our knowledge of this stormy period. While the Constitution was before the people for consideration Madison, Hamilton and Jay wrote a series of papers called in collected form *The Federalist*, in which they discussed government in general, defined the character of the proposed union, met objections and proved the advantages to be derived from effective central government. Madison was a member of the Virginia Convention which met to consider the ratification of the Constitution and by his keen analysis and clear-cut argument contributed more than any other man to secure its adoption. His chief opponent was Patrick Henry; his ablest ally, John Marshall. Owing to Henry's antagonism, Madison was defeated as candidate for the Senate, but was elected as representative to Congress and took his seat in April 1789. During this session of Congress, Hamilton and Madison, who had hitherto been as one in their efforts to centralize power, drifted apart, and Madison gradually began to endorse Jefferson's position as to certain inalienable States' rights. There is no reason to accuse him of bad faith; his statesmanship was never overbold, and Hamilton's commercial system, his extensive financial schemes, especially the funding of the national debt and the assumption of State debts by the general government, gave so much power to Congress that Madison withdrew his support from the Secretary of the Treasury and vigorously opposed his measures. Although Madison had now definitely cast in his fortunes with the Republican opposition his moderation and good sense enabled him to retain the friendship of most of his political opponents.

From 1793 to 1796 the country was greatly agitated over the relation of the United States toward France, and on the outbreak of war between France and England the President issued a neutrality proclamation to the great disgust of the French, who had expected active friendship from the United States. Although both countries interfered shamefully with American commerce, popular sentiment and the Republican party sided with France. In 1794 Madison, supported by Jefferson, introduced a bill demanding retaliatory measures against Great Britain, and a temporary embargo was laid on British commerce. The signing of the Jay treaty by the President was a signal for an outburst of popular indignation, and Madison, as leader of the opposition in Congress, opposed the appropriation of money to carry out the terms of the treaty. In 1797 Madison retired and enjoyed for a short while the pleasures of private life. A year later he was aroused to activity by the passage of the unpopular Alien and Sedition Acts. The Virginia resolutions written by Madison denounced these laws and declared that in case of a dangerous exercise by the Federal government of powers not granted by the compact the States had the right to interfere. These resolutions still further emphasized the position of the Republican party and pledged it to the support of States' rights. The year 1801 brought an overwhelming defeat to the Federalists; Jefferson was inaugurated President and

Madison became Secretary of State. He was thoroughly in sympathy with the President's views and shared the popularity of that brilliant administration. The last years of Jefferson's second term were clouded by the insulting actions of England and France with reference to the American navy. The orders of the British and the decrees of Napoleon concerning the seizure of neutral vessels were ruining American commerce. Vessels were seized by the English and by the French, American seamen were impressed and ports blockaded. Jefferson was opposed to war and in his efforts to coerce France and England by commercial restrictions he induced Congress to lay an embargo on British trade. Instead of injuring England this seriously crippled American commerce and was soon repealed. In this troubled condition of affairs Madison became President in 1809. Like Jefferson he was opposed to war and tried diplomacy. He attempted through Erskine, the British envoy, to have the British Orders in Council withdrawn. Erskine agreed, but the British government repudiated the action of its envoy. Negotiations with another British Minister, James Jackson, were also fruitless. Continued insults were heaped upon American ships and men; the country demanded definite action against the aggressors; even the peace-loving President, weary of the offensive attitude of England, at last gave his consent to war. On the 18th of June 1812 war was declared and continued with varying success until the Peace of Ghent in 1814. After nearly three years of fighting, after ruinous loss of money and property, the country was practically just where it stood in 1812, "its boundary unchanged, its international rights still undefined, the people still divided." Madison lacked vigor as a war President, nor had he sufficient determination to secure advantageous terms of peace. He was far greater as a framer of the Constitution than as an executive.

In 1817 Madison retired from office and settled on his estates of Montpelier. He had married in 1796 Mrs. Todd, afterward the celebrated Dolly Madison, and with her he enjoyed 20 peaceful years in his country home. He was interested in farming, he thought and wrote much on all topics of public interest. He discussed social and moral questions, slavery and education. "Education," he maintained, "was the true foundation of civil liberty." The last public appearance of the venerable statesman was in the Virginia Convention of 1829 which met to amend the State constitution. In character Madison was thoughtful, reserved and cautious; in a time of hard drinkers he was notably abstemious. Moderation characterized all his habits. Dignified and kindly and an excellent conversationalist among those he knew well, he made and retained warm friends. His knowledge was profound and accurate, and he was considered an authority on all constitutional matters. His literary style was labored, but his arguments were keen, comprehensive and convincing.

Consult *Lives of Madison* by J. O. Adams (1850); Rives (1859-68); Gay (1884); also *Letters and Writings of Madison* edited by Hunt (9 vols., New York 1900-10); Adams, Henry, *History of the United States from 1801 to 1817* (1889-90). Consult also Hunt G., *Life of James Madison* (New York 1902);

Taylor, H., *The Real Authorship of the Constitution of the United States Explained* (Washington 1912); Wilson, J. G., *Presidents of the United States* (Vol. I, New York 1914).

EMILIE McVEA,

*Late President, Sweet Briar College.*

**MADISON, Lucy Foster**, American novelist; b. Kirksville, Mo., 8 April 1865. She was educated at the high school in Louisiana, Mo., and was married in 1890 to W. S. Madison. She published *'A Maid of the First Century'* (1899); *'A Maid at King Alfred's Court'* (1900); *'A Colonial Maid'* (1902); *'A Daughter of the Union'* (1903); *'A Maid of Salem Towne'* (1906); *'Peggy Owen'* (1908); *'Peggy Owen at Yorktown'* (1911); *'A Life of Joan of Arc'* (1918); *'Life of Washington'*; *'Story of Abraham Lincoln'* (1927). D. 16 March 1932.

**MADISON, Ga.**, city and Morgan County seat, alt. 667 feet, on the Georgia and the Central of Georgia railroads, 70m. SE. of Atlanta. Its industries are cotton and lumber. It has airline service; a mayor-council government; a public library, and a hospital. The city was named in honor of Pres. James Madison. Pop. (1930) 1,966; (1940) 2,045.

**MADISON, Ill.**, village in Madison County; alt. 425 feet; on the Mississippi River; opposite St. Louis, Mo., on Illinois Central and other railroads (freight). Madison, Granite City, and Venice, known as the Tri-Cities, are steel-mill cities. Merchants Bridge at Madison was built in 1890. Pop. (1940) 7,782.

**MADISON, Ind.**, city and Jefferson County seat; alt. 460 feet; on the navigable Ohio River; 86m. SE. of Indianapolis; served by the Pennsylvania Railroad (freight only); and three airports. Situated in a region of dairy and poultry farms, it has food processing and packing plants. Tacks and rivets, laundry baskets and hampers, work clothes, porch furniture, saddle trees, and women's shoes are manufactured. It has a city-county library, and the county historical society's museum. At Hanover, near by, is Hanover College, founded in 1827. Madison was a key point in the development of the state's transportation system. From Madison were built the first two "turnpike" roads and the first steam railway west of the Allegheny Mountains. The Lanier Memorial, maintained by the state, is the former home of James Franklin Doughty Lanier, banker and railroad promoter, who financed the state when politics blocked its military service during the Civil War. Pop. (1940) 6,923.

**MADISON, Me.**, village in Somerset County; alt. 290 feet; on the Kennebec River; 35m. N. of Augusta; on the Maine Central Railroad. There is abundant water power and manufactures include woolen textiles, lumber, and paper. Historic Old Point and Norridgewock are near by. There were some settlers here before the Revolution, and the village was incorporated in 1804. Pop. (1930) 3,036; (1940) 2,581.

**MADISON, N. J.**, borough in Morris County; alt. 250 feet; 18m. W. of Newark; on the Delaware, Lackawanna and Western Railroad. It is a suburban residential borough; its only industrial establishments are the greenhouses in which Italian workers are employed and which give the borough the popular name of Rose

City. The handsome and elaborate Municipal Building was a memorial to her son given by Mrs. Hartley Dodge, daughter of William Rockefeller. Madison is the seat of Drew University (see DREW THEOLOGICAL SEMINARY), and two miles away, at Convent Station, is the College of St. Elizabeth, a Roman Catholic college for women. The Morris and Essex Kennel Club holds an annual dog show at Madison. The borough was incorporated in 1889; its government is administered by mayor and council. Pop. (1940) 7,944.

**MADISON, S. Dak.**, city and Lake County seat; alt. 1,669 feet; 43m. NW. of Sioux Falls; on the Chicago, Milwaukee, St. Paul and Pacific Railroad. It is in an agricultural area raising livestock and grain, and has flour mills, grain elevators, hatchery, creameries, and packing plants. Eastern State Normal School (coeducational) is here. Lake Madison, two miles away, is a resort. Madison was settled in 1875 and named for the Wisconsin city. Pop. (1930) 4,289; (1940) 5,018.

**MADISON, Va.**, town and Madison County seat; alt. 395 feet; about 28m. NE. of Charlottesville; in the eastern foothills of the Blue Ridge Mountains. The county was formed from Culpeper in 1792. The brick courthouse, built in 1829, replaces an earlier one of logs in which William Wirt (q.v.) began his practice of law in 1793. Pop. (1940) 281.

**MADISON, Wis.**, capital and 3d largest city of the state, Dane County seat, and center of the University of Wisconsin, alt. 861 feet, situated in the south central part of the state, on the isthmus between lakes Mendota and Monona, and also on Lake Wingra; 82m. W. of Milwaukee, on the Chicago and North Western; the Chicago, Milwaukee, St. Paul, and Pacific; the Illinois Central; and the Milwaukee Electric railroads. A network of modern state and federal highways with motor bus and truck transportation in all directions, and airports and airlines also serve the city. It is in an agricultural and industrial region which has dairying, diversified farming, and manufacturing. The life of the capital centers around government and politics, education, trade, and industry. Local industries include railroad shops, breweries, limestone quarries, meat packing, an extensive wholesale and retail trade, and manufactures of dry cell batteries, machine tools, farm machinery, tin containers, paper boxes, dairy and other food products, hospital equipment, and bottle caps. Government, state, municipal, and federal activities provide employment to several thousand local residents whose payrolls and other expenditures contribute much to the commercial life of the city. Madison is one of the leading educational centers of the United States. Its educational and cultural institutions embrace a splendid public school system, private and parochial schools, music and art schools, a Carnegie public library, the University of Wisconsin (see WISCONSIN, UNIVERSITY OF), the libraries of the state, the Wisconsin Historical Society, and the Wisconsin Academy of Sciences; the museums of different local institutions and various cultural organizations. Maintained here also, in co-operation with the university, is a United States agricultural experiment station and a noted Forest Products Laboratory. Among the other federal agencies in the city is a Dis-

trict Court. Madison, with its extensive lake frontage, splendid government, university, and private buildings, and numerous public parks, is one of the most attractive state capitals in the Union. The State House or Capitol, 434 feet long and 283 feet in height at the dome, begun in 1904 and completed at a cost of approximately \$8,000,000, occupies a commanding site near the heart of the city; the State House grounds embrace an area of 14 acres. Between Lake Mendota (area over 15 square miles) and University Avenue lies the campus of the university, with its many splendid buildings. The city has excellent recreational facilities and is a popular tourist center, and summer resort.

Upon the creation of Wisconsin Territory in 1836 the site of the present city was chosen for the capital and named Madison in honor of President James Madison. Settlers were soon attracted, it was incorporated as a village in 1846, connected with Milwaukee by rail in 1854, and chartered as a city in 1856. The beginnings of the state university date from 1849. The city has mayor and board of aldermen, and its water supply system is municipally owned. Pop. (1930) 57,899, (1940) 67,447. The regular population, a large percentage of which is of German and Scandinavian extraction, is augmented during the university sessions by several thousand students and in season by resort visitors.

**MADISON BARRACKS, N. Y.**, United States military post in Jefferson County, on Black River Bay, within the town of Sackett's Harbor, and about one mile from Lake Ontario. The post occupies about 108 acres and possesses in addition a rifle range of 868 acres at Stony Point. It was established in 1813.

**MADISON RIVER**, a stream in Montana which has its rise in the Rocky Mountains, at an elevation of 8,300 feet. It flows north through Madison County and unites with the Jefferson Fork of the Missouri, at Three Forks. It flows through several picturesque valleys and deep cañons; its whole course is about 230 miles.

**MADISON SQUARE GARDEN**, a former building in New York City, occupying a block or square between Madison Avenue and Fourth Avenue, and 26th and 27th streets. It contained an amphitheater seating 20,000 people, and was popular for horse shows, dog shows, circuses and political and religious meetings. The building also contained a theater, concert hall, restaurant and roof-garden. It was razed in 1926, the New York Life Insurance Company building now occupying the site. A sports arena at 50th Street and Eighth Avenue now bears the name.

**MADISONVILLE, Ky.**, city and Hopkins County seat, alt. 460 feet, on the Louisville and Nashville and the Illinois Central railroads, 125m. SW. of Louisville; also on state and federal highways. Coal mining, tobacco growing, and dairying are the county's principal activities. The government is mayor-council. There is a public library, also a city hospital. Completed projects with government assistance include a new high school with gymnasium, stadium, and workshops. The city was named in honor of Pres. James Madison. Pop. (1940) 8,209.

**MADISONVILLE, Ohio**, former village in Hamilton County, now absorbed by Cincinnati, and forming a residential suburb of that city,

**MADLER**, mäd'ler, **Johann Heinrich**, German astronomer: b Berlin, 29 May 1794; d Hanover, 14 March 1874. He was educated at the University of Berlin. He became a professor and one of the governing faculty at the Berlin Normal School and was associated with William Beer in an extended series of lunar observations. He was professor at the Observatory of Berlin in 1836-40, and from 1840-65 he was professor and director of the observatory at Dorpat, Russia. The superb equipment of the observatory enabled him to make observations with an accuracy never before attained and he now devoted himself principally to the fixed stars. He published a map of the moon in four sheets which surpassed anything then published, and which still retains a high reputation, in 1834-36. Author of 'Populare Astronomie' (1841); 'Die Centralsonne' (1846); 'Die Eigenbewegungen der Fixsterne' (1856); 'Allgemeine Selenographie' (1857); 'Geschichte der Himmelskunde' (2 vols, 1872-73), etc.

**MADNESS.** See **INSANITY**.

**MADOC**, mäd'ok, Welsh prince, who, in consequence of some civil dissensions, went to sea with 10 ships, and 300 men, in 1170, and discovered America. He made a second voyage to and from this unknown land, but finally was lost to the knowledge of his countrymen. The story is to be found in Lloyd and Powell's 'Cambria' (1584), and Hakluyt gives an account of the voyages in his collection. In Owen's 'British Remains' the legend is referred to. Later travelers have imagined that they had discovered traces of these early immigrants in different parts of the country, and we have had stories of white Indians and Welsh Indians, etc. (Consult Humboldt's 'Personal Narrative,' Book IX, note A). Southey made Madoc the subject of an epic poem. Stephens, in 'Madoc, an Essay on the Discovery of America in the 12th Century' (1893), asserts that the story of Madoc is a baseless fable.

**MADONNA IN ART**, *The*. In the early days of Christianity the teaching of the Church was largely carried on by the medium of pictures; statuary was added later. The translation of the Bible was in Latin and examples of the book were produced in parchment manuscripts emanating from the monastery *scriptoria*. They were very few and therefore costly. Hence it is not surprising that the clergy utilized the graphic abilities of their more talented members and other available artistic sources to portray biblical scenes in mosaics and wall paintings to impress on the minds of the populace (practically all illiterates) the teachings of their creed. The subjects to be treated were largely selected by the patrons (the clergy), and those subjects naturally were the ones most likely to appeal to the masses. The relation of Mother and Child viewed from the aspect of Divine Inspiration could not but be foremost of the subjects selected as most certain to gain popular attention and to reach the innermost sentiments of humanity. And, from the limner's standpoint, no theme could better enthuse and inspire genius to perfection of execution and the bringing forth of ecstatic pictorial expression. Again, admiration of a master's presentment of the subject obviously was cause of emulation

of contemporaries and future artists to produce, if possible, more inspired conceptions of the subject. A natural sequence of these accumulated impulses was the prolific production and reproduction of the Madonna in as many aspects and forms as the differences in genius itself. Hence the innumerable examples of the lovely theme which have present existence. No single subject has been treated so prolifically and from so many viewpoints as this of the divine Madonna. In order to bring within a limited space some intelligible review of such a vast and profound subject the examples are usually divided into different classifications according to the method of treatment of the theme, the different episodes of the entrancing story, etc. Thus we get the Madonna "enthroned," the Madonna "in Gloria," and the "Annunciation," the "Nativity," "Adoration of the Magi," "Flight into Egypt," etc. The earliest depiction of the Madonna is a subject of controversy. Legend tells us Saint Luke, Evangelist, painted pictures of the Holy Virgin, and there are several extant drawings which are claimed to be from his pencil. The Virgin as *orante*, usually termed the "Intercessor," with arms outstretched in Oriental form of supplication, is most generally accepted as the first method of treatment as found in mosaics and on glasses of the 4th or early 5th century, some with the name "Maria" inscribed. An early Assyrian manuscript of the 7th century in the chapel of Venantius has such an *orante* depiction. On ancient Christian sarcophagi the representation of the Holy Virgin is very rare, but in the mosaics of Santa Maria Maggiore (middle of the 5th century) we have the Virgin and Child in medallions on the triumphal arch, and on the spandrels of the arch are the Annunciation, Presentation in the Temple, Adoration of the Magi, Journey of Christ with Mary and Joseph to Jerusalem. Of about the same date is a painting seen in Saint Agnes catacomb, in which the Holy Virgin seated stretches forth her hands in prayer. By 736 the Iconoclasts created much destruction of all kinds of biblical depiction from Byzantine artists, but by 787 comes the revival and the Virgin again appears as *orante*, veiled and aged. In the early representations of the Virgin appears a golden background representing glory and majesty; this gives way later to backgrounds of the angelic host. With the advance or development of the Madonna theme Cimabue (13th century) produced the "enthroned" Madonna, and this great early Florentine master was soon followed with Guido's Siena picture of the subject. And with the arrival of these talented masters the Byzantine stiffness and prescribed rigid rulings of the Greek Church forbidding natural depiction disappears and the human form and garb take on the suppleness of flesh and clothing. It is the beginning of free and highly-developed art, and as such is usually the phase chosen as the first classification with which to deal with detailed descriptions of the theme of the Madonna in Art.

**The Madonna Enthroned.**—In its early conception the subject depicts the "Queen of Heaven" (*Regina Cæli*), seated in the sky, surrounded by the saints and angels. An early example is Simone's picture in the Siena Council Hall; the Virgin in Campo Santo, Pisa, is another. As Queen of Heaven, having homage



paid her, she is crowned first then veiled. In this conception of the subject the throne is supposed to be a heavenly throne and symbolic of dignity and divinity. Mary is usually garbed in a red tunic as symbol of love and with a blue mantle signifying Heaven. The Child is vested in a tunic till the 15th century, but then generally appears undraped. The Babe generally holds up a hand in blessing, but in the 6th century mosaic of the enthroned Madonna in the Basilica of San Apollinare Nuovo, Ravenna, Mary raises her hand in blessing. The first human figures we see around the throne are the saints, especially John Baptist, the Apostles and the patrons of the particular church to which the work of art is dedicated. Saint John is represented as a child generally bearing a reed cross; at times, as messenger, he has wings. Later patriarchs, prophets, sibyls are in attendance about the throne. Well-known examples are very many and but few can be mentioned. That of Fra Bartolommeo (Baccio della Porta, 1469-1570) is in the Pitti Gallery, Florence; Andrea del Sarto's Madonna di San Francesco in the Uffizi Gallery there stands on a pedestal throne with harpies at its corners (hence sometimes termed "Madonna of the Harpies"). Luni's Madonna in the Brera, Milan, is seated on a coping. Perugino's Madonna (Vatican, Rome) is one of this master's best works and depicts the Virgin seated on a carved and inlaid architectural marble throne. Pinturicchio's Madonna in the chapel of Saint Andrea, Perugia, has the child Saint John standing at the throne's foot. Raphael's Ansidei Madonna (London National Gallery) is reading a book while Saint Nicholas and Saint John Baptist are in attendance at the two sides. The English government paid £72,000 in 1885 for this wonderful painting. Other enthroned Madonnas of Raphael are the Madonna of Saint Anthony (owned privately) and the Baldacchino Madonna (Pitti Gallery, Florence). Among the early exponents of the enthroned depiction were Vivarini, Bellini and Cima; Girolamo dai Libri's altar-piece in San Giorgio Maggiore, Verona, is noteworthy, and Venice is perhaps richest in Madonna creations. Later masters to paint this subject were Titian, Tintoretto and Veronese. Of the early type Cima's picture in the Venice Academy takes about first position; the Madonna is seated on a marble throne having a pillared portico. Palma's beautiful altar-piece in Vicenza is noteworthy among enthroned Madonnas. Bellini excelled in this style and the examples deserve their renown. Ruskin calls his painting in the Venice Academy "One of the greatest pictures ever painted in Christendom in her central art power." The Virgin is accompanied by three saints on each side and three choristers below. His Frari Madonna (Venice) has three compartments, the Virgin occupying the central one. His San Zaccaria Madonna, in spite of its fine execution and beauty of conception and grouping, was created when the artist was over 80 years old. Next we come (late in the 15th century) to Giorgione (who lived only 34 years) who has two Madonnas, one in the Madrid Gallery, the other in Castel Franco. In the latter the throne is exceptionally high, the upper step being above the heads of the accompanying Saints Liberale and Francis. This shows great depth and refinement of feeling

in the drooping head and dreaming eyes. While the queenly aspect of these Italian pictures is never displayed with a crown as is frequent on the mosaics dating from the 8th to the 11th century, except in the pictures by Giovanni da Murano and Carlo Crivelli (Venetian school), the Holy Virgin in German art is frequently crowned when enthroned, as in Holbein's Madonna at Darmstadt, that by Van Eyck at Frankfort and that by Memling at Bruges, and Schongauer's at Munich. In the enthroned Madonna of Quintin Matsys in the Berlin Gallery the Virgin is kissing the Child and the northern tendency is vividly displayed in the accessory of the stand containing food. Of modern artists whose enthroned Madonna creations are worthy of mention should be cited Bouguereau, Ittenbach, etc.

**The Annunciation.**—The angel's announcement to the Spiritual Bride is a subject as prolifically depicted in Christian art as any other. It was a theme displayed everywhere, in every village, street, church or dwelling, in painting or carving. Early we find it in the mosaics, as on the arch of the Santa Maria Maggiore. The attitudes of the Virgin differ in periods or in accordance with the individual conception of the artists. In some the angel stands before the young virgin who kneels in pious submission, or the angel kneels in some; or again, as in Giotto's work, in Padua, both kneel. Later artists picture Our Lady in the Annunciation often as a crowned queen, bejeweled, but in modern work the Virgin and surroundings are treated with simplicity and mystic symbolism is given to the subject. While it is usual that but one announcing angel appears on the scene, Andrea del Sarto, Tintoretto, Francia and Fra Bartolommeo give an angelic choir. Usually the Holy Dove is seen flying toward Mary from the Father. Pisanello's Annunciation in Verona pictures the most beautiful innocence in girlish beauty. Beautiful purity is expressed in the works of Fra Angelico; that in the Oratorio del Gesù, at Cortona, accompanied by the colonnade and scene of Eve's expulsion as accessories, is extremely impressive. In the Uffizi Gallery is a Botticelli Annunciation depicting the angel paying the deepest obeisance at Mary's feet while the Holy Maid stretches out her hands in surprised humility. Other well-known Annunciations are by Simone Martin in the Uffizi, Fra Filippo Lippi, Carlo Crivelli (National Gallery, London), where the scene is produced in a surrounding of magnificent architectural decoration, while Perugino (in Montefalco picture) shows utter simplicity. Paolo Veronese depicts fear as the Virgin shrinks back at the message. Northern creations reveal their source by bringing in such accessories as a spinning wheel, couches, etc. Jan van Eyck places the Holy Virgin by an altar in an alcove with an open book to rest her arm on, her face averted toward the heavenly messenger, who is in a cope and carries a sceptre. Albert Dürer's series of the life of the Virgin depicts in the Annunciation Mary as a German Hausfrau, surrounded by many architectural accessories. In the National Gallery, London, we find Rosetti's work affording very simple treatment in modern depiction, and Burne-Jones gives the scene in a finely constructed painting.

**The Nativity.**—In the works of the masters

on this subject we find Mary beside her Son's cradle in the act of adoration. Even the early pictures show angels attendant but the veil found in earlier depiction is discarded later. The scene is cast in a cave or cleft in a rock generally transformed into a stable, but there are variations to suit the conceptions of the different masters. In Santa Maria, Trastevere, is a mosaic displaying Mary reposing on a couch in the cleft of a rock. Giotto's school makes the scene a stable of wooden construction; some place the theme in the open with perhaps a ruin or fragment of some structure as accessory. The *swaddled* Babe of the Italian school is, of course, the *bambino* of that country. Orcagna (church of Assisi) places Mary sitting beside the cradle arranging the covering, while Giotto has the Child before her while she is seated on the ground. Perugino's Nativities (in Perugia and Rome) display Mary and Joseph kneeling in adoration of the Babe with angels present. Well known is the Nativity in the London National Gallery by Piero della Francesca (unfinished) in which the Child is lying on the ground with the mother kneeling beside while angels are playing on lutes and singing. That depiction by Luca Signorelli in the same place also shows the Infant on the ground, Mary kneeling beside Him. In the same gallery we have Botticelli's depiction of the scene enacted in a shed, and Carlo Crivelli uses the same surroundings. In Luni's picture an angel holds the Child while Mary kneels with folded arms, her face one of the most beautiful of any of the Madonnas. In most of the above and in others shepherds are portrayed in more or less proximity. In some cases the painting is properly called "Adoration of the Shepherds" on account of their close presence to the Virgin and Child, but later works generally place them in the background. The illumination of the scene frequently (with Rembrandt, Correggio, etc.) emanates from the glowing rays passing from the Holy Babe.

**Adoration of the Magi.**—This was a favorite subject with the Catacomb dwellers and we find over 20 depictions of the scene in these subterranean galleries. Mary is seated on a throne and the Magi in their tunics and Phrygian caps bring gifts of dishes and baskets. Their number runs from three to six. The early method of treatment makes the Babe rest in the mother's arms, but in the Santa Maria Maggiore (Rome) mosaic the Child is seated on a pedestal with hand upraised in benediction. Usually we find Him in His mother's lap. The emanating glory of the Babe frequently is the source of light and the benediction act is frequently His pose. An Adoration of the Magi mosaic (about 6th century) is in the chapel of San Apollinare Nuovo at Ravenna, in which the Magi lead a procession of female martyrs bringing their crowns as votive offerings to the Madonna. Giotto's painting in Padua places the scene in a stable while Fra Angelico (National Gallery, London) chooses the entrance of a cave as the scene of the King's devotions. In Filippo Lippi's 'Adoration of the Kings' in the Uffizi, Florence, Mary is located in a wide landscape in which figure a host of persons surrounding her. Other noted Adorations are by Baldassare

Peruzzi (London National Gallery), Pinturicchio, Mehling (Bruges), Rogier van Weyden (Munich), Rembrandt; Rubens painted 15, of which one is in Madrid, another in the possession of the Duke of Westminster.

**Flight into Egypt.**—In pictures brought under this title Mary is sometimes seen seated on an ass with Joseph walking beside; the ox which tradition says accompanied them rarely appears in the paintings. Sometimes an angel leads the ass. Well-known depictions of this scene are by Giotto (Padua), Fra Angelico (Florence), Pinturicchio, Memling (Munich).

**Riposo.**—This phase of the Madonna series is more popular with artists of the past than the 'Flight.' It depicts the Holy Family after the tedious journey through the desert resting in a fertile country surrounded by fruit trees, Mary bathing the Child, etc. It was greatly favored by German and Flemish masters (Albrecht Altdorfer's in Berlin, Lucas Cranach, Martin Schongauer's in Vienna, etc.).

**Pastoral Madonnas.**—From the 15th century a new style of treatment of the Madonna theme arrives. It is the placing of the Virgin in a landscape surrounding. There are but few, such as Raphael's earliest Madonnas. Three most noted are La Belle Jardinière (Beautiful Gardener) in the Louvre; Madonna in the Meadow (Madonna in Grunon) in Belvedere Gallery, Vienna; and the Cardellino Madonna (Madonna of the Goldfinch) in the Uffizi, Florence. All three among the most prized paintings in the world and too popularly multiplied to need description. Raphael's later work, the Casa Alba Madonna, is less well known with its turbaned Roman patrician depiction of the Virgin. Leonardo da Vinci's Madonna of the Rocks gives the Holy Virgin, in the foreground of a grotto, grouped with the Child and the infant John. Luni painted a pastoral Madonna (in the Brera, Milan), but very noted is Correggio's 'La Zingarella' (Gipsy) or 'Madonna del Corniglio' (Naples) which is posed in a lovely landscape as is also his kneeling Madonna in the Uffizi, both of which always call forth admiration. Palma Vecchio's 'Santa Conversazione' in Naples, Dresden, Munich and Vienna are public favorites. In the *pastoral* class of Madonnas must be included the three "enclosed garden" examples by Francia (Munich), Filippino Lippi (Florence) and by Schongauer, in which the Virgin and Child are surrounded by a hedge of roses with a landscape in the rear perspective.

**Domestic Groups.**—This method of depiction of the biblical scene was vogue among painters of the middle 15th century. They consisted of the Holy Virgin and Child associated with Saint Joseph, Saint Elisabeth and her son, and frequently other attendants. A number depict Saint John Baptist child playing with the Holy Infant; Saint Ann, mother of the Holy Virgin, appears in some; da Vinci even depicts (in a cartoon) Our Lady seated on Saint Ann's knees. Girolamo dai Libri (London National Gallery) painted such a group, and Perugino has a work in which Saint Ann rests her hand on the Virgin's shoulders while boys and women relatives are grouped about. Very popular are the groups that include the infant Saint John Baptist playing with the Child (as Raphael's in National

Gallery, London) Both Botticelli and da Vinci created pictures of Saint John adoring the Infant. In the same inspiration is Luni's 'Madonna dell'Agnello' at Lugano. Another popular group subject adopted in pictures by Titian, Perugino, Correggio, Parmigiano, Borgognone, Memling, etc., is the 'Marriage of Saint Catherine,' in which the Child is placing a ring on the finger of the saint. Good modern representations of such groups are by P. A. J. Dagnan-Bouveret in the New Pinakothek, Munich, in which the holy mother, depicted as a peasant, is seated on a bench in the carpenter's shop and the Child at her breast, under her mantle, illuminates and pierces with rays of glory the coarse textile. But, though numerous, both French and German modern paintings of the Madonna lack the devotion or even inspirational features which give such glory and beauty of conception to the early Italian masters and those of the Renaissance.

**Madonnas in Domestic Surroundings.**—These include the 'Holy Family' series. The worldly environment in depiction of this mystic religious subject has found few exponents, and those confined largely to northern artists. To the German and Dutch the maternal dignity of the *Hausfrau* appeals so strongly as to call from their limners' hands sacred Madonnas in everyday household surroundings. Of such we have pictures by Quintin Matsys (Munich) with its Flemish sleeping apartment, having the Virgin and Child as occupants, the 15th century German artist Schongauer (Belvedere Gallery, Vienna) gives Joseph feeding the cattle from hay in his arms looking with fondness in the doorway at the Virgin holding a bunch of grapes while the Child nestles in her lap. But in Italy, Giulio Romano in his *Madonna della Catina* (Dresden) portrays the Divine Babe in a basin (*catina*), ready for the bath, while the infant Saint John pours water from a ewer. The *Madonna dell'Impannata* (of the papered window), formerly considered as Raphael's and later ascribed to Romano, pictures Elisabeth, Mary Magdalen and the child Saint John beautifully grouped with the Virgin and Child. The picture of the French artist Mignard (Louvre) called 'La Vierge à la Grappe' is well known. Salembini's *Holy Family* (Pitti Palace) depicts the gambols of the Child Jesus and Saint John with puppies. Rembrandt's two 'Ménage du Menuisier' (carpenter's home), in the Louvre and Petrograd, picture a combined living and workroom with Joseph at his bench and Mother and Child as central subjects; his painting in the Munich Gallery also brings Saint Joseph as carpenter into the scene.

**Mater Amabilis.**—The Madonna of Love. Some consider this the most popular type of the Madonna in Art. The depiction of a mother's love is one of the most endearing themes of the artist for all humanity. Raphael's sublime depictions, of course, lead in this type with his *Madonna Tempi* (Munich), in which the Virgin Mother presses her lips to the Child's cheek. His *Conestabile* (Petrograd) and *Ansedei Madonnas* and Babe peering in companionship into the Book of Wisdom belong here, also the *Holy Family of Francis I*, in which she stoops to lift the Child from the cradle and the *Madonna della Sedia* (chair

Madonna) in the Pitti Gallery, Florence, embracing the Infant. Correggio's painting in the Uffizi really belongs to this series with the Virgin stooping over the Babe, and his *Madonna del Cesta* (of the basket) in the London National Gallery, named after the basket (*cesta*) lying on the floor; and his *Madonna del Latte* (Petrograd), also his *Madonna della Scala* (of the Staircase) in Parma are surely of this category. Titian sometimes created such a Mother of Love as in his 'Vierge au Lapin' (Louvre) in which she is calming a rabbit for her Child to play with, also the *Madonna with Saints Ulfo and Brigida* (Madrid) in which the Child is accepting a gift of flowers from the latter saint, and another in the Uffizi Gallery. Of pictures portraying the Holy Mother suckling her Babe there are a number, best known perhaps being the *Madonna of the Green Cushion* (Louvre) by Andrea Solario. And the Mother watching the sleeping Babe is another phase of the theme treated by masters of art, such as Raphael's *Madonna of the Diadem* (Louvre), others by Guido Reni (Rome), Sassoferrato, Carlo Dolce, etc. And among northern artists the *Mater Amabilis* has been pictured by Durer, Holbein (Meyer Madonna), Rembrandt, Rubens, van Eyck, Schongauer. Among modern artists who have created fine pictures of this theme are Gabriel Max, Bouguereau, Carl Muller, N. Barabino, Dagnan-Bouveret, Guay, Macomber, Bodenhausen.

**Madonna in Gloria.**—The Madonna in the Sky. These usually represent a landscape below and the Madonna in the upper sky. In the *Madonna dell Stella* by Fra Angelico, in San Marco, Venice, a star is located over the head posed on the veil, the figure is full length surrounded by a mandorla of golden rays. The *Madonna of Saint Sebastian* (Dresden) has a surrounding of cherubs and clouds with saints below. Moretto (Brescian school) treated the theme traditionally, but very lovely is his *Madonna of San Giorgio Maggiore*, Verona, which shows very naturalistic effects in atmosphere above and depicts Saints Cecilia, Lucia, Catherine, Agnes and Barbara beneath; another of his is in the Berlin Gallery, a mandorla encompassing Mother and Child. Three paintings on this subject are in Venice by Gianfrancesco Caroto, also one by Cavazolla (Morando); these all are of the Brescia school. Tintoretto and Titian produced creations of this theme. Raphael gave us the *Foligno Madonna* (Vatican), which is greatly admired, but his *Sistine Madonna* (Dresden) brings us to the apex of highest inspiration with its majestic full-length figure in perfect poise and the charm of the cherubs surpasses all found in other depictions. Later came the selection of the crescent moon on which artists posed the Madonna in Glory; the exponents of this style are Albrecht Durer, Sassoferrato (Vatican), Tintoretto (Berlin). Modern painters of the theme are Bouguereau, Bodenhausen, Defregger, etc.

**Pietà.**—This is probably the most popular and touching conception of the Madonna in Art. Every Roman Catholic church has one. It is the representation of the Virgin displaying the complete sacrifice. Francia's beautiful conception of the theme is shown in his painting in the London National Gallery, in which the outstretched limp body of the Crucified

One lies across the lap of the Holy Virgin while an angel on either side attends. Luni portrays the Head, crowned with thorns, falling back on the Mother's brow while she supports Him. The same scene with Saint John and Mary Magdalen attending is often termed a Pietà but correctly the groups should consist of Mother and the lifeless Savior, perhaps with angel or angels attending. Giovanni Bellini's painting in the Ducal Palace, Venice, shows the Crucified One being raised from the tomb by Mary. His head resting on her face, Saint John holds up His arm; another by this master is in the Uffizi Gallery. Crivelli painted two very pathetic Pietàs, one of which is in the Vatican. In the Pitti Palace is a Pietà by Fra Bartolommeo of most touching aspect. But Michelangelo's great group in the Vatican is said by many to be unsurpassed in its sublimity.

**Mater Dolorosa.**—The Divine Mother in anguish. This theme has called forth from the great painters facial expression of excruciating human agony of the most touching and pathetic depiction ever accomplished. The true pathos of sorrow displayed by the Spanish school is very prominent. Murillo's depictions excelling in their pictured anguish and tears. Tradition poses the hands clasped, the veil casting a shadow on the Virgin's head, the face, with its welling tears, glancing upward. At times the Madonna is placed at the foot of the Cross. For the most part the face is of middle age, except as with Michelangelo, who depicts youth and to a critic declared "Purity enjoys eternal youth". Reni and later artists frequently depict a young maiden. Many of the paintings of the Mater Dolorosa type are but the head, others half-length figures. A beautiful example of Quintin Matsys' is in the London National Gallery. Many of the creations are disfigured by the unnecessary swords depicted as piercing the Virgin's bosom, referring, of course, to Simeon's prophesy. They are supposed to emphasize the pathetic subject—Vandyck uses the weapons.

Other phases of the Madonna theme pictured by masters are many but space forbids further description. Of such are the subjects known in the art world under the titles: "Purification," "Presentation to the Temple," "Assumption," "Last Judgment," "Seven Joys and Seven Sorrows of the Virgin," etc.

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**MADOQUA**, mād'ō-kwa, a diminutive antelope (*Cephalolophus abyssinicus*), one of the duiker-boks (q.v.), common in Abyssinia. The fore-parts are rufous, but gray is the prevailing hue. The same name is sometimes applied

to other very small north African antelopes, as the Beni Israel.

**MADRAS**, British India, the capital of the presidency of Madras, on the Coromandel coast, lies on an open, sandy shore, exposed to the swell of the Bay of Bengal, which breaks upon the beach with great violence. It is 835 miles southwest of Calcutta. A modern harbor formed by two piers obviates the former dangerous passage through the surf. The city is built on level ground and with its nine suburbs occupies 27 square miles. The chief commercial portion is Black Town, now George Town, closely and irregularly built, containing the native and East Indian (or mixed) population, with a few European merchants and their families. On the south is the ancient Portuguese settlement Saint Thomé founded in 1504, with a Roman Catholic cathedral. One of the chief objects of interest is Fort Saint George, which commands George Town and the network of roads, and may be considered the nucleus of the city. It was built in 1639, and is admirably situated for the defense of the town and shipping. It contains a church, the barracks, and an arsenal. The government-house, the cathedral of Saint George and some of the other churches and public buildings, are handsome structures. Besides the university, the Presidential College and a medical college, supported by government, there are large missionary institutions. The public park, containing a small zoological collection, is the chief recreation ground of the city. From the meridian of the observatory connected with the university all India takes its time. Madras is the chief seat of the provincial government offices, of the Supreme Court, a board of revenue, marine board, etc. Notwithstanding the disadvantages of its position it is a place of great trade, and a new harbor has greatly tended to increase traffic. The landing and shipping of goods is effected partly by lighters to the pier-head inside the harbor, and partly by the old *masula* or surf-boats, which land their cargoes on the beach. The imports are chiefly manufactured goods from the United Kingdom, especially cottons, wines, spirits, metals, stationery, etc. Among the principal exports are cotton, grain, indigo, coffee, tea, hides, oil-seeds, dye-stuffs, pepper, etc. The chief industries are connected with the preparation of goods for export, such as coffee pressing and cotton cleaning. Cotton-spinning factories have been established at Madras. The country at a short distance from the city presents a remarkable contrast to its barren sandy shore, having the appearance of a fine park. The mean annual temperature is 82°, which rises in the hot weather to 96° in the shade. The city has railway communication with all the principal places of India, has good water supply and sewerage systems, is lighted by electricity and gas and is administered by a body of 32 commissioners.

Madras was founded in 1639 by the English, who obtained the grant of a piece of ground for the erection of a town and fort (Fort Saint George) from the Rajah of Chandgherry. It soon became a flourishing city and the chief station of the English on the Coromandel coast. In 1746 it was taken by the French, who kept it until 1749, when peace was made and the place was restored to the English by the Treaty of

Aix-la-Chapelle. In 1758 it was again besieged by the French under the celebrated Lally, who was obliged to retreat after a siege of two months. Pop about 647,000, of whom 88 per cent are Hindus, 9 per cent Mohammedans and 3 per cent Christians.

**MADRAS**, ma-drās', British India, a presidency occupying the southern portion of the Indian Peninsula. It stretches from the Bay of Bengal to the Arabian Sea, almost enclosing Travancore and Mysore, while a long, narrow portion extends along the west side of the Bay of Bengal till it meets the Bengal province about 70 miles from the mouth of the Mahānadi. It has a total area, excluding native states, of 142,260 square miles, the area of the native states being 10,696 square miles. Jaipur and Haidarabad bound it on the northwest, while the west borders for a short distance with Bombay. The chief mountain ranges are the Western Ghāts, the Eastern Ghāts and the Nilgiri Mountains. The principal rivers are the Godāvari and Kistna, with their tributaries; and the North Penner, South Penner, Palar, Kaveri, Coleroon and Vaiga. There are no lakes of any importance, but many salt lagoons or inlets of the sea. Extensive forests yield teak, ebony and other valuable timber trees. The wild animals are those common to other parts of India, the elephant, tiger, chetah, bear, bison, elk, spotted deer, antelope, jackal, wild hog, jungle sheep, etc. The climate generally is reckoned the hottest in India, but differs wildly in different localities according to elevation. Of the population, 71 per cent is engaged in agriculture, and 86 per cent of the cultivated area is under food crops. The soil along the coasts, particularly that of the Carnatic, is for the most part light and sandy; inland it consists of a decomposed syenite impregnated with salt, which in dry weather covers the ground with a saline efflorescence. The district of Tanjore on the banks of the Coleroon is esteemed the granary of southern India. The principal vegetable productions are rice, wheat, barley, maize and all the other grains common in India; sugarcane, areca, yam, plantain, tamarind, jack-fruit, mango, melons, coconuts and a variety of other fruits; ginger, turmeric, pepper, tobacco, hemp and cotton, for the growth of which the soil seems to be particularly well adapted. Tea is grown to some extent. Weaving is the only indigenous art of any consequence, and cotton cloth, muslins, carpets and silks are manufactured to a limited extent. The grand total of sea-borne trade for 1936-37 was rupees 661,000,000. Of external trade, 66 per cent is with the British Empire, and 33 per cent with the United Kingdom. The government of the presidency is vested in a governor subordinate to the governor-general of India. The revenue usually exceeds the expenditure, but the apparently healthy condition of the finances is largely illusory, as the presidency has been living on windfalls in the shape of grants from the Indian government. At the head of the educational institutions is the Madras University, an examining body, and since 1923 a teaching university, granting degrees in arts, law, medicine and engineering. There are various schools and colleges affiliated to the university.

The province is divided into 22 districts with

a population of about 46,700,000. The native feudatory states of Travancore, Cochin, Banganapalle, Puddakotai and Sandur, with a total population of about 5,461,000, were in 1923 placed in direct relation with the government of India. The languages are Tamil, Telugu (spoken by the great majority of the inhabitants), Canarese and Malayalam, with lesser dialects spoken by the more barbaric tribes in the mountains; Mahrathi and Gujerathi in the northern and northwestern parts; Uriya in the northeast; while Hindustani is the language spoken everywhere by the Mohammedans. Capital, Madras (q.v.). See also INDIA.

**MADRAS HOUSE**, The, is not only an admirable example of the work of Granville Barker as a dramatist but also of the modern type of play written by, and for, those who conceive of the theatre as a place where it is permissible, even enjoyable, to *think* as well as to *feel*. It does not depend for its effect on thrilling situations, violent emotions or cunningly devised mystery but depicts the dramatic interplay of character and circumstance under normal conditions with a skill, insight and humor which afford even more pleasure, perhaps, to the reader than to the spectator. Of all the wide variety of human relations involved in the play, none are dealt with, so to speak, in actual crisis and there is a resulting lack of dramatic tension, but the author succeeds, nevertheless, in making one acutely conscious of the intensity and force of the emotions that underlie the surface not only of the play but of life. The two main themes are business and sex. The particular aspect of business which is presented is one that is unfamiliar in America, namely, the "living-in" system, inherited from the days of guilds and apprentices in England, under which clerks and other employees receive board and lodging as part of their wages. It is obvious that in a large "drapery establishment" employing both men and women, like the Madras House, such an arrangement would be likely to give rise to social complications. The business theme, therefore, although open to the reproach of being local in its application, may boast the charm of novelty for Americans. The sex interest, on the contrary, is of the familiar, universal, all-pervading variety. It inter-penetrates the life of the conventional suburban family, into which we are introduced in the first act; it comes frankly to the fore in the second, in the case of Mr. Brigstock, "third man in the hosiery," and one of the "lady shop assistants"; it pulls the strings during the sale of Madras House to an American millionaire in the third act; and it looms largest of all in the last act, in which that unconscionable old lady-killer, Constantine Madras, finally renounces his family and the trammels of conventional morality and turns Mohammedan. In this, as in his other plays, Barker, following Bernard Shaw's lead, omits the customary list of *dramatis personæ* and introduces his characters in a sort of literary preface to each act which is no less interesting and illuminating than the dialogue. "The Madras House" was written in 1910 and was first produced at the Duke of York's Theatre in London on 9 March of the same year under the direction of the author.



**MADRAZO**, ma-drä'thō, **Raimundo de**, Spanish painter. b. Rome, Italy, 24 July 1841; d. 1920. He studied under his father, Federigo de Madrazo, and Léon Cogniet in Paris. He was very successful in portrait and genre and numbered many prominent Americans among his sitters. He was equally happy in pastel and oils, and his 'Fête during the Carnival' in Miss W. K. Vanderbilt's collection is as brilliant in conception as in technique. Among his most celebrated portraits are those of the Queen Regent of Spain, the Countess Pillet-Will; Mrs. Cornelius Vanderbilt; Mrs. Whitney; Miss Anne Morgan; Madame Madrazo; Samuel P. Avery. 'The End of a Masked Ball' was awarded a first class medal at Paris in 1878 and was subsequently purchased by W. K. Vanderbilt. Other genre works all of a high order are 'Fête during the Carnival'; 'Girls at a Window' (both in Metropolitan Museum, New York); 'Lady with a Parrot' (purchased by W. A. Clark, New York); 'Lady with Guitar'; 'Déjeuner of the Infanta'; 'Pierrette.' Madrazo was made commander of the Legion of Honor. His brother, RICARDO (b. 1852), was also a pupil of his father and achieved some success as a portrait and genre painter.

**MADRAZO Y KUNT**, **Federigo de**, Spanish painter: b. Rome, 12 Feb. 1815; d. Madrid, 11 June 1894. His father, José de Madrazo y Agudo (1781-1859), was a painter of note and from him Federigo received his early instruction. Subsequently he studied under Winterhalter at Paris. His early works are 'The Resurrection of Christ' (1829); 'Achilles in his Tent'; 'The Continence of Scipio' and portraits of Baron Taylor and Ingres; 'Godfrey Proclaimed King of Jerusalem' (1837). Thereafter he went to Rome and while there painted 'Maria Christina' (1843); 'Queen Isabella'; 'The Duchess of Medina-Cœli'; 'Countess de Vilchès' (1847), and several portraits. In 1873 he was elected foreign member of the Paris Academy of Fine Arts. After his father's death he became director of the Prado Gallery and director of the Academy of San Fernando. He founded *El Artista*, the pioneer of Spanish art journals; it was followed by *El Renacimiento* and *El Semanario pintoresco*. Of his later works the best known are the genre pieces, 'The New Song'; 'The Cigarette'; 'The Musical Matinee,' etc. His brother, LOUIS DE MADRAZO, was also a painter. His best work is 'The Burial of Saint Cecilia' (1855).

**MADRE DE DIOS**, ma'drē dē dē'oos, or **AMARU-MAYU**, Bolivia, a river, the chief affluent of the Beni, rising in the Carabaya Mountains, Peru, about 50 miles east of Cuzco, and after an easterly course, south by north, of 900 miles, chiefly through the Bolivian department of La Paz, uniting with the Beni at Rivera Alta, where it is 1,500 yards wide. It was explored in 1865 under the auspices of the London Geographical Society, and since 1881 has been the highway for the exploitation of the rubber forests along its course.

**MADREPORE**, a genus of coral-forming polyps (see CORAL AND CORAL ISLANDS) containing numerous species from the warmer and tropical seas of all parts of the earth. The true Madrepores increase by budding, the re-

sult being usually large branching colonies in which the coral between the cups containing the polyps is perforate and spiny. The different species frequently attain large dimensions and constitute one of the most important elements in the formation of coral reefs. The polyps have 12 septa and 12 tentacles, 6 being large, the other 6 smaller, while a peculiar feature is the presence of 6 U-shaped tubes connected with the oesophagus at either end. The term *Madreporaria* is sometimes used to include all polyps in which the parts are arranged in multiples of six, and which secrete coral on the external surface of the body.

**MADRID**, ma-drid' (Sp. ma-drēd'), Spain, the capital of the republic and of the province of Madrid, a part of New Castile, situated near the centre of the country, on the left bank of the Manzanares, a sub-affluent of the Tagus. It is built on several low and irregular sandhills on a plateau 2,140 feet above sea-level, and is surrounded by a barren and extensive plain, treeless save in the vicinity of the city, and stretching northward to the snow-capped Sierra de Guadarrama. In winter the climate is exceedingly severe, and even in summer, when the heat is excessive, piercingly cold blasts descend from the mountains. The prevailing winds are the parching southeast *Solano*, and the icy north wind from the Guadarrama. The climate is described in a Spanish proverb as "three months of winter and nine months of hell." The temperature ranges from 18° to 105° F.; is subject to frequent and sudden changes; and between the sunny and shady sides of a street the difference of temperature is sometimes as great as 20°. Madrid was until recently surrounded by a wall 20 feet high, pierced by 5 large and 11 small gates; of these gates 3 remain: the Puerta de Alcalá on the east, the Puerta de Toledo on the south, and the Puertillo de San Vicente on the west. The streets are distributed somewhat irregularly around the Puerta del Sol, which is in the centre of the capital. The principal streets are broad, long and airy; and the houses are in general well constructed, substantial and of good appearance.

In common with most European capitals, Madrid has undergone much modern improvement; the streets are traversed by electric and horse car lines; are lighted by gas and electricity; the telephone system is efficient; and sanitation has been much improved. The former abundant and pure water supply, is, however, inadequate to the demands of the growing population. Madrid has no edifices of great antiquity. The royal palace, situated at the western extremity of Madrid, is one of the most magnificent in the world. It occupies the site of the original Alcazar (castle) of the Moors, and is of enormous extent, being 470 feet each way, and 100 feet high. The architecture is a combination of Ionic and Doric. It contains a small but splendid Corinthian chapel, and a library of nearly 100,000 volumes, and the armory is one of the finest in the world. The Chamber of Deputies, which occupies an area of 42,700 square feet, has a hexastyle Corinthian portico on the grand façade, destined for the entrance of royalty on state occasions. On the two lateral façades are the entrances for the members. The Royal Exchange and the Bank of Spain are two modern imposing buildings.

Madrid stands far behind many provincial towns as regards its churches, which are, with exception of a few attached to conventual establishments, poor and of indifferent artistic merit. The church of San Jeronimo el Grande is probably the most distinctive. The most important of the charitable institutions are the military hospital, an extensive building in the northwestern corner of the city; and the Hospicio of San Fernando, with schools for both sexes, the pupils being taught various handicrafts. At the southeastern corner of the city stands the general hospital. There are also hospitals for orphans and for foundlings, and numerous charities, mainly of a religious kind.

Madrid has 72 public squares, which are generally irregular both as regards their form and their edifices, as well as deficient in decorative monuments. Of these the Plaza Mayor is one of the largest and most regular. The Plaza de Oriente is adorned with 40 statues of Gothic kings, as well as those of the Asturias, Leon, Castile and Aragon. In the centre is a fine equestrian statue of Philip IV. Among places of amusement the most popular is the Plaza de Toros (bull-ring), a building which is about 1,100 feet in circumference, and capable of containing 12,000 spectators. The Prado, a sort of wide boulevard, about two miles long, running north and south on the east of the city, is the chief promenade, and beyond it is the chief public park, including the Buen Retiro gardens, near which are the new handsome building for various ministerial departments and the new station of the Southern Railway Company. The Royal Picture Gallery which stands in the Prado contains more than 2,000 pictures, including a great many by all the best masters, especially those of Spain. There are also good pictures in the Academy of Fine Arts. The National Library, founded by Philip V, contains 650,000 volumes. The Library of San Isidoro consists of 66,000 volumes. The University of Madrid (the most important in Spain) which arose out of that of Alcalá de Henares, founded in the 15th century, has an average attendance of 5,000 students. There are besides numerous other schools, academies and colleges, public and private, including a normal school, a deaf and dumb institution, a normal school for the blind, a commercial school, schools for engineers, a conservatory of music, an academy for the fine arts with a picture gallery, a veterinary college, an academy of medicine and surgery, etc. The famous monastical and palatial Escorial (q.v.) is 27 miles northwest of the city.

The industries have shown a remarkable development during the last decade, the chief manufactures being tobacco, leather goods, chocolate, beer, shoes, boots, plated ware, coaches, gloves and fans. There is a royal carpet and tapestry factory in the Pacifico suburb. The commerce is important, as Madrid is the entrepôt for all the interior provinces. Retail business is mainly in the hands of foreigners, mostly French, but most of the wholesale trade is carried on by native houses. Madrid has railway communication with Paris and Lisbon, and the chief cities of the Peninsula.

Madrid in the Roman period probably was the insignificant hamlet Majoritum. Under the name Majorit it appears as a Moorish outpost of Toledo when captured in 932 by Ramiro II

of Leon. Henry IV about 1461 made some additions to the older town, which was placed on the western eminence over the river. Madrid only began to be a place of importance under Charles V. Declared the seat of the court by Philip II in 1560 the city rapidly grew up at the expense of the older and better situated capitals. It was the creation of a century, and its increase was very slow after the age of Philip IV. The gross mistake of a position which has no single advantage except the fancied geographical merit of being in the centre of Spain was soon felt, and on Philip II's death his son, in 1601, endeavored to move the court again to Valladolid, which, however, was found to be impracticable. The French under Murat entered Madrid in 1808 but soon evacuated it. The French held it again from 1809-12 when Wellington took it and restored it to the Spaniards. After 1873 it suffered greatly from civil struggles and in 1937 it was besieged by Generalissimo Franco, but the city held out through bombardments and air attacks until May 1939 when the Loyalist government surrendered it to the insurgent Nationalists. The population of the city in 1934 was 1,048,072 and that of the province, which has an area of 3,084 square miles, was 1,535,322. No population figures were available after the civil war, 1937-39.

**MADRIGAL**, a short lyric poem generally on amatory subjects. Those of Tasso represent the finest specimens of Italian poetry.

**MADRONA**, a large and ornamental tree of California (*Arbutus menziesii*), of the heath family, which often grows nearly 100 feet in height. It has a wide-spreading head, small evergreen leaves and the limbs and large parts of the trunk, where the thin outer bark easily peels off, are bright red. It grows in the foothills, and up to a moderate elevation, but not naturally in the valleys. It is a near relative of the strawberry tree of Europe.

**MADSTONE**, a vegetable substance or stone which when applied to a wound caused by the bite of a mad dog is said to prevent hydrophobia. The most famous one in the United States is owned by the descendants of a family named Fred, in Virginia. This stone was brought over from Scotland in 1776. It is said to be the one spoken of by Sir Walter Scott in 'The Talisman' and has been religiously preserved as one of the most valuable relics of the age. It is about two inches long by one inch broad, and about half an inch thick, and is of a chocolate color. When applied to the wound it adheres till all the poison is absorbed, when it drops off. It is then soaked in warm milk or water for a time, and when removed the liquid is found to be full of a greenish-yellow scum. It is said that of the 130 cases in which it has been applied for the bite of a mad dog, none ever suffered from hydrophobia. There are said to be three authenticated madstones in the United States.

The belief in a madstone was common hundreds of years ago in the East, and travelers in India in 1677 and 1685 make mention of it. Tradition said it grew on the head of certain snakes. George F. Kunz, a New York expert in gems, identifies the madstone, or snakestone, of the East, with the stone known as tabersheer, which is a variety of opal found in the joints

of the bamboo in Hindustan and Burma. This stone is formed of juice which by evaporation becomes mucilaginous, then a solid substance, and when placed in the mouth will adhere to the palate or cause water to boil. Sir David Brewster says it is found in the joints of diseased corn-stalks and is formed by sap depositing silica.

**MADURA**, ma-doo'ra, southeastern Asia, an island of the Malay Archipelago, Dutch East Indies, off the east end of Java, from which it is separated by the Strait of Madura. The island is about 105 miles long east to west, and 30 miles broad, with an area of 1,770 square miles. Madura forms one of the 17 Dutch residences or provinces into which Java and Madura are divided, and is administered by a governor or resident. The Dutch first landed in Madura in 1747. It is undulating but not mountainous, and though in general well watered, in some places, especially on the coast, there is a want of water, and the soil is unfertile. The interior, however, is fertile, though not so productive as Java. Maize, coconuts, tobacco, Jamaica pepper, tamarinds and salt are the chief products; stock-raising is an important industry; and the exports include also birds'-nests, country cloths, white and striped, poppy-oil, rattan-mats and baskets, etc. The chief towns are Bangkalang (pop. 24,000), Pamekasan (the capital, pop. 22,000), and Sumanap. Pop. 1,843,601, of whom 4,734 were Chinese and 621 Europeans.

**MADURA**, southern India, the capital of a district of Madras, 344 miles by rail southwest of Madras. It was the capital of the ancient Pandhyan kingdom, for over 2,000 years was the political and religious capital of southern India, and is noted for its interesting architectural monuments, chief of which is the Temple of Minarchi, dating from almost prehistoric times, restored and added to by Tirumulla Nayak (1622-62). It ranks fourth among the seven strongholds of Hinduism, and occupies a parallelogram of 56,000 square feet containing 50 buildings. The city was known to the Greeks and Romans. Cotton and tobacco manufactures and coffee mills, are the principal industries. Madura is the seat of Catholic and American Protestant and other missions, and has several high-grade educational institutions. Pop. 182,018.

**MADVIG**, mäd'vig, Johan Nikolai, Danish scholar. b. Svanike, island of Bornholm, 7 Aug. 1804; d. Copenhagen, 13 Dec. 1886. Educated at Frederiksborg and Copenhagen, he was from 1829 till 1879 professor of Latin in the University of Copenhagen. He took a profound interest in the politics of his country, and from 1848 till 1851 was Minister of Education and Religion. He is best known by critical editions of Latin classics and by his Latin grammar translated into English and most European tongues. His chief works are 'Emendationes in Ciceronis Libros Philosophicos' (1828); 'Cicero's De Finibus Bonorum et Malorum' (1839, amended 1876); 'Ciceronis Orationes Selectæ Duodecim' (1830); 'Cicero's Cato Major and Lælius' (1835); 'Opuscula Academica' (1834-42; new ed., 1887); 'Emendationes Livianæ' (1860); 'Livii Opera' (with Ussing, 1861-66); 'Adversaria Critica' (1871-84); 'Latin Grammar' (1841); 'Greek Syntax' (1846); 'Con-

stitution and Administration of the Roman State' (1881-82); 'Autobiography' (published posthumously, 1887). Consult Sandys, J. E., 'A History of Classical Scholarship' (Cambridge 1908).

**MÆANDER**, mē-än'der, now **MEN. DERES**, a river of Asia which arises in Phrygia not far from Celænæ. It forms the boundary between Caria and Lydia, and flows into the Icarian Sea between Priene and Myus, opposite Miletus. It covers a course about 200 miles long, is deep and narrow, and navigable only for small vessels. It was celebrated among the ancients for its winding course, and gave its name to the intertwined purple borders on mantles and other dresses, as well as upon urns and vases.

**MÆANDRINA**, mē-än-di'na, one of several genera of brain corals, so called from the elongate and meandering cups containing the polyps, which give a spherical mass of these corals an appearance strikingly like the human brain with its convolutions. This appearance is due to the fact that the polyps in their growth do not completely divide, but stretch out into long bands, frequently branching, with many mouths and tentacles, and a common body and digestive cavity. Brain corals occur in all tropical seas, several species being found in Florida and the West Indies. Their solid masses make them important factors in the formation of coral reefs.

**MÆCENAS**, mē-sē'nas, **Gaius Cilnius**, Roman nobleman. b. between 73 and 63 B.C.; d. 8 B.C. He was the friend of Augustus, and patron of Virgil and Horace. It is unknown where he received his education, but he was intimate with the literatures both of Greece and Rome, and was himself an occasional writer in prose and verse. We first hear of him authentically (40 B.C.) as negotiating a marriage between Octavianus and Scribonia; and in the same year he contributed materially to bring about the Peace of Brundisium, by which Octavian and Antony were reconciled. Two years later he was again employed in reconciling these self-willed potentates; and 36 B.C. he was twice dispatched by Octavian from Sicily to Rome to quell disturbances which had broken out there. He was for these services entrusted with the administration not only of Rome, but of all Italy, when Octavian became emperor with the title of Augustus. His palatial residence and gardens on the Esquiline were the rendezvous of all the *literati* of Rome, and of numerous parasites. But those admitted to his intimacy were the greatest geniuses and scholars of Rome, among them being Virgil and Horace. To the intercession of Mæcenas, Virgil was indebted for the recovery of his farm, and Horace also owed to him many favors. Consult Baehrens, 'Fragmenta Poetarum Romanorum' (Leipzig 1886); Harder, F., 'Fragmenta des Mæcenas' (Berlin 1899).

**MAELAR**, Lake of. See **MÄLAR**.

**MAELSTROM**, mäl'ström, or **MOSKOE-STROM**, Norway, a rapid current or tidal whirlpool off the northwest coast immediately southwest of Moskenesoe, the southernmost of the Lofoten Isles. The current runs with the tides alternately, six hours from north to south and six hours from south to north, producing

immense whirls. The depth of the water around, supposed at one time to be too great to admit of soundings, has been ascertained not to exceed 20 fathoms, with a bottom of rocks and white sand. Immediately to the west the soundings are from 100 to 200 fathoms. The whirlpool, idealized by mediæval and later writers, including Edgar Allan Poe, is greatest at high or low water. When the wind is northwest and opposed to the reflux of the waves it attains its greatest fury, and becomes extremely dangerous, but in ordinary circumstances it may be traversed without difficulty.

**MAES**, or **MAAS**, mas, Nicolas, Dutch painter, b. Dordrecht, 1632, d. Amsterdam, December 1693. He entered the studio of Rembrandt at Amsterdam about 1650 and studied there about four years, attaining a style of execution and coloring so similar to that of his master that many of his paintings were for a long time believed to be Rembrandt's work. He returned to Dordrecht in 1654 and in the succeeding 10 years did his best work, which retained the influence of Rembrandt, particularly in coloring. From the time of his going to Antwerp in 1665 his style changed and he abandoned the domestic genre type of work for that of portraiture, and his subsequent pictures show the influence of Van Dyck. So different were the characteristics of the two periods that at one time it was believed that there were two artists of the same name. Of his earlier and better period notable examples are 'The Reverie' (Ryks Museum, Amsterdam); 'Card Players' (National Gallery, London); 'The Eavesdropper' (Six Gallery, Amsterdam); 'Young Girl Peeling an Apple' (Metropolitan Museum, New York); 'Hagar's Departure,' long believed to be a Rembrandt (Earl of Denbigh's Collection); 'The Listening Girl' (Buckingham Palace). Numerous other examples exist in the galleries of Berlin, Brussels, Munich, The Hague, Frankfurt, Hanover and Petrograd.

**MAESTRICHT**, mäs'triht, Netherlands, the capital of the province of Limburg, on the left bank of the Maas, at the confluence of the Geer, lies on the Belgian frontier, 19 miles north-northeast of Liège, 56 miles east of Brussels and 52 miles west by south of Cologne. Among the chief buildings are the church of Saint Servais, partly Romanesque and partly Gothic, dating from the 10th century, the town-hall, the courts and general prison and the arsenal. The fortifications were dismantled between 1871 and 1878; it is, however, still a considerable garrison town. Maestricht carries on an active transit trade with Belgium, and has manufactures of glass and earthenware, firearms, shot, cloth and paper-hangings; also iron-foundries, beet-root sugar refineries, tobacco and cigar factories, tan-pits, distilleries and breweries, the latter producing very noted beer. About three miles from the town is the Pietersberg (Peters Hill), on which stands the fort of Saint Pierre, and under which are extensive subterranean quarries of extraordinary interest, the excavation of which is supposed to have been begun by the Romans. Maestricht was besieged and taken and 8,000 of its inhabitants were massacred in 1579 by the Spaniards under the Duke of Parma; in 1673 it was taken by Louis XIV, and again by the French in 1748 and 1794. William III of England failed to

capture it and in 1830 its garrison resisted successfully the attacks of insurgent Belgians. Pop. (1937) 66,430.

**MAESTRICHT BEDS**, in geology, a series of calcareous beds 100 feet thick, on the banks of the Meuse, near the Dutch city of Maestricht. The Maestricht calcareous rock contains *Belemnites*, *naucronata*, *Pecten quadricostatus*, etc., also the genera *Braculites*, *Hamites*, etc., which are only Mesozoic. It is a connecting link between the Secondary and the Tertiary rocks, but in all essential respects belongs to the former.

**MAETERLINCK**, mät'er-līnk, Maurice (Gallicized from the original MOORIS MATERLINCK), Belgian author. b. Ghent, 29 Aug. 1862. He was educated in a Jesuit school in Belgium, then studied law, was admitted to the bar in 1887, but was from the first more interested in letters, and in 1896 settled in Paris as an author. His work may be divided into three parts,—his lyric verse, his dramas and his philosophical essays. Of the first the two volumes 'Serres Chaudes' (1889) and 'Douze Chansons' (1896) are representative. Maeterlinck's verse is imaginative, but lacks in any strong degree the melodic quality. His dramas are 'La Princesse Maleine' (1889); 'Les Aveugles' (1890); 'L'Intruse' (1890); 'Les Sept Princesses' (1891); 'Péleas et Mélisande' (1892); 'Alladine et Palamides' (1894); 'La Mort de Tintagilles' (1894); 'Aglavaine et Sélysette' (1896); 'Ariadne et Barbebleu' (1899); 'Sœur Béatrice' (1899); and 'Monna Vanna' (1902); 'Jayzelle' (1903); 'The Blue Bird,' a sublimated Fairy Tale (1909); 'Mary Magdalene' (1910); 'The Death of Tintagiles' (1913); 'The Power of the Dead' (1923). Several have been translated by Richard Hovey (qv.), and 'Monna Vanna' was rendered by Alexis I. du P. Coleman. The dramas are Maeterlinck's most striking work. Their eerie symbolism can hardly be explained, but must be appreciated at first hand. Though they inaugurated a new theatrical school—the 'Drame Intime'—they are properly reading plays, and lose their subtlety, mystic qualities and impressiveness in presentation. 'Péleas et Mélisande' was given in the United States by Mrs. Patrick Campbell. To many the essays are his ultimate test as a force in literature, the most interesting things that Maeterlinck has done. The volumes are 'Le Trésor des Humbles' (1896); 'La Sagesse et la Destinée' (1898), and 'La Vie des Abeilles' (1902); 'Le double jardin' (1904); 'Mon chien' (1906); 'L'Intelligence des Fleurs' (1907); 'La Mort' (1913); 'The Unknown Guest' (1914); 'The Wrack of the Storm' (1916); 'Betrothal' (1918); 'The Burgomaster of Stilemonde' (1918); 'Les Sentiers dans la Montagne' (1919); 'The Great Secret.' He visited the United States in 1921. See under headings MONNA VANNA; PELLEAS ET MÉLISANDE. Consult Harry, 'Maurice Maeterlinck; a Biographical Study' (1910); Thomas, 'Maurice Maeterlinck' (1911); Sturgis, 'The Philosophy of Maeterlinck' (1914); Clark, 'Maurice Maeterlinck: Poet and Philosopher' (1915); Courtney, 'Development of M. Maeterlinck' (1904).

**MAEVIAD AND BAVIAD**. See BAVIAD.

**MAFEKING**, mā-fā-king' or māf'ē-king, Cape Colony, a former Bechuana settlement, now a town, the administrative seat of the

Bechuanaland protectorate, close to the borders of the Transvaal, 870 miles by rail northeast of Cape Town and about 200 miles west-southwest of Pretoria. The town stands near the upper Malopo River, is 4,194 feet above sea-level and contains several substantial buildings, including a Masonic temple, a town-hall and a hospital and there is a good water-supply and a race-course. Mafeking sustained a protracted siege during the South African War of 1899-1901. It was isolated in October of the former year and was brilliantly defended by a small force under Colonel (now General) Baden-Powell, until relieved by Colonel Mahon in May 1900.

**MAFFEI, Francesco Scipione, MARCHESE** DR., Italian dramatist and scientist: b. Verona, 1 June 1675; d. there, 11 Feb. 1755. He studied at the Jesuit College, Parma, for five years and from 1698 at Rome. He was present at the battle of Höchstädt in 1704, taking part in the Bavarian campaign as a volunteer under his brother, Gen. Alessandro Maffei. He commenced a literary career in 1710 by the publication of '*Della scienza cavalleresca*,' noted for a censure of duelling; became associated in founding the *Giornale dei letterati*, and edited with introductions some of the best plays of the Cinque cento. In 1713 appeared his own play '*Merope*,' since frequently reprinted, one of the most brilliant successes achieved in the history of dramatic literature. While it lacks a love motif, it is considered a masterpiece of Italian tragedy. Voltaire adapted it for the French stage, declaring it "worthy of the most glorious days of Athens" and it inspired Home's celebrated English drama '*Douglas*'. His versatility and scientific attainments are shown in subsequent work which include '*Teatro italiana*' (1723-25); '*Istoria diplomatica*' (Mantua 1727); '*Le Ceremonie*' a comedy (1728); and '*Verona illustrata*' (1732). From 1732 he spent four years in travel in France and England, returning by way of Holland and Germany, and wrote '*Gallia Antiquitates*' (Paris 1733); '*Istoria teologica*' (Trent 1742); '*Dell'impiego del denaro*' (1746), justifying loans on interest; and '*Arte magica*' (1749-54). He was also associated with Maratori in the great collection of the '*Rerum italicarum scriptores*' which occupied 15 years and were published in 25 folio volumes (1723-38). A complete edition of Maffei's works were published in 21 volumes (Venice 1790); and selected '*Opusculi litterari*' (Venice 1829; Milan 1844). See **MEROPE**.

**MAFFITT, John Newland**, American clergyman: b. Dublin, Ireland, 28 Dec. 1794; d. Mobile, Ala., 28 May 1850. He was a Wesleyan preacher in Ireland and in 1819 emigrated to the United States, where he became a member of the New England Methodist Episcopal conference. He founded the 'Western Methodist' in Nashville in 1833 and conducted revivalist meetings throughout the South and West. In 1837 he became professor of elocution and *belles-lettres* at La Grange College, Louisiana, and in 1841 he was elected chaplain to Congress. He published several religious works, also an autobiography.

**MAFFITT, John Newland**, American naval officer: b. at sea, 1819; d. Wilmington, N. C., 1866. He enlisted in the United States navy in 1832 and in 1861 entered the service of

the Confederacy where he took rank as commodore. In command of the *Florida* he rendered himself valuable to the Confederate cause, taking many prizes and damaging seriously United States commerce. Owing to ill-health he resigned before the end of the war.

**MAFIA, mā-fē'a**, a Sicilian secret society similar to the Camorra (q.v.), which has long existed in Naples, but much more powerful. The Mafia is essentially a form of organized lawlessness, but its organization is sufficiently elastic to baffle all the attempts of the government to suppress it. It is generally said to have had its origin in the *compagni d'armi*, a kind of police organized in Sicily early in the 19th century and dissolved by Garibaldi in 1860. Its members, who are required to prove their daring in a knife duel, are bound never to carry their suits to the regular courts or to give evidence before them. The Italian government has for many years attempted to curb the activities and power of the Mafia, and has to a degree succeeded. In 1902 one of its leaders, Baron Palizzolo, was convicted of murder. The influence of the society has been felt among the Italian born population of the United States. In New Orleans it was suspected in 1890 of having caused the murder of the chief of police. The sequel—the lynching of several Italians—caused a diplomatic exchange between the Italian and United States governments. Its influence in New York was destroyed only after years of persistent and aggressive effort on the part of the police. Mussolini, following his accession to power in Italy, sought to destroy the influence of the Mafia, with some success. Consult Alongi, G., '*La Mafia*' (Turin 1886; 2d ed., Palermo 1904); Calou, E. C., '*La Mafia*' (Madrid 1905); Paton, W. A., '*Picturesque Sicily*' (1898).

**MAGALHÃES, ma-ga-lyä'ensh, Domingos José Gonçalves de, VISCONDE DE ARAGUAYA**, Brazilian poet and diplomat. b. Rio de Janeiro, 13 Aug. 1811; d. Rome, Italy, 10 July 1882. He was educated in medicine; but entered upon a diplomatic career in 1836, when he became an attaché at the Brazilian embassy at Paris. He was Minister to Austria in 1859-67, and Ambassador to the United States in 1867-71. At the time of his death he was Ambassador at Rome. He began the writing of verse at an early age and attained a considerable reputation, being regarded as the leader of the romantic school of Brazilian poetry. Among his more important works are '*Suspiros poeticos*' (1836); and '*A confederação dos Tamoyos*' (1857). His '*Obras completas*' were published (Paris 1864).

**MAGALHÃES, Fernão de.** See **MAGELLAN, FERDINAND**.

**MAGALLANES, mā-gāl-yä'nes**, Chile, a territory lying south of the department of Chiloe, and including the many islands, large and small, along the western and southern coasts of Chile. Its entire area is about 46,000 square miles. Among the more prominent islands in the territory are the Wellington group, Hanover group, Queen Adelaide Archipelago, Madre de Dios and a part of Tierra del Fuego. The mainland is a narrow strip of mountainous sea-coast. The islands are barren; there are extensive forests on the mainland, but very little agricultural land. The climate



is disagreeable and stormy. The animal life is not abundant, the seal and sea-otter frequent the coast and in the sheltered regions east of the Andes cattle, horses and sheep are raised. Coal has been found in the southern part and there are also copper and gold mines. The capital is Punta Arenas. Pop. 29,000.

**MAGDA.** Sudermann's 'Heimat' ('Home') was the sensation of the theatrical season 1889-90 in Berlin, and the play, either in the original German or in translations commonly bearing the title 'Magda'—the name of the heroine—is probably to be regarded as the most widely known and the most successful drama of the end of the century. Its success is traceable to at least four causes: its theme of revolt against paternal tyranny is one to which the times were sympathetic, its construction is skilful and in every sense theatrical, it contains a number of picturesque episodes and amusing characters, and is distinguished for animated dialogue; but most of all, its heroine is an unconventional, self-assertive, and emotional "new woman" who affords an actress an unusual opportunity for temperamental display. The technique is a clever combination of the naturalism of Ibsen and the methods of the *drame à thèse* familiar in the works of Dumas fils. The conventional *raisonneur*—in the person of the Pastor Heffterdingk—mediates between Magda and her father, and debates with each the problems presented by the situation of a prodigal daughter who returns home after a life of moral irregularity but operatic success. We are bidden to despise respectability and admire independence. But the representative of each side is far from being an acceptable champion. Magda's father fails to recognize the difference between a child with duties and a human being with rights, and Magda reveals no conception of the fact that duty is only in part a social obligation and is in its innermost essence an obligation of self-respect. Translated by C. E. A. Winslow (Boston 1896); edited by F. G. G. Schmidt (Boston 1909).

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**MAGDALA**, mäg'da-lā, or **MAKDALA**, Abyssinia, fortified town on the plateau of Talanto in Shoa, 72 miles northeast of Debra Tabor. The original fort was built on an isolated rock 3,300 feet above the Beshilo, and was stormed and wholly destroyed by the British troops under Sir Robert Napier 13 April 1868, Sir Robert becoming Baron Napier of Magdala in recognition of the achievement. The natural strategic advantages of the position, however, caused the fort to be rebuilt and the town has acquired considerable importance. Altitude, 9,110 feet. Pop. about 4,000.

**MAGDALEN**, mäg'da-lén, a name applied to one of the Marys in the Gospels, derived from her place of birth, or former residence, in order to distinguish her from other women of that name (Matt. xxvii, 56, 61; Mark xv, 40, 47; Luke viii, 2; John xix, 25).

**MAGDALEN** (mòd'lín) **COLLEGE**, Oxford, England, originated in Magdalen Hall, founded in 1448 by William Patten, commonly called William of Waynflete, from the place of

his birth, bishop of Winchester and Lord High-chancellor of England, who 10 years later added the College of Saint Mary Magdalen. In some respects Magdalen is the most noteworthy college of the university. Five of the fellowships are attached to five Waynflete professorships, of moral philosophy, chemistry, mineralogy, physiology and pure mathematics, established in lieu of the three former lectureships of divinity, moral philosophy and natural philosophy. There is also a professorship of botany. The buildings are noted for their beauty and occupy extensive grounds. Among Magdalen's celebrated alumni are Addison, Camden, Foxe, Gibbon, Hampden, John Lyly, Sacheverell, Selborne, Tyndale and Cardinal Wolsey. Consult Wilson, 'Magdalen College' (1899); Glasgow, 'Sketches of Magdalen College' (1901).

**MAGDALEN** (mäg'da-lén) **ISLANDS**, Quebec, Canada, near the centre of the Gulf of Saint Lawrence, 54 miles northwest of Cape Breton, Nova Scotia, and 100 miles southwest of Newfoundland. Amherst, Alright, Coffin, Wolf, Grindstone, Deadman, Entry and Byron islands compose the group which are politically attached to the district of Gaspé, Quebec. The inhabitants exist chiefly by the fisheries of the adjacent waters; gypsum which is found in veins and hollows, and grindstones from Grindstone Island, are exported. House Harbor on Alright Island, and Amherst where there is a custom house, are the chief settlements. Pop. about 5,000.

**MAGDALENA**, mag-da-lā'nā, a river of Colombia, South America, which has its rise in the Andes Mountains in the southwestern part of Colombia, and flows north to the Caribbean Sea. A short distance from the sea, at the city of Barranquilla, the river divides and discharges its waters through two channels. It is about 1,000 miles in length. It is navigable for ocean steamers to La Dorada, 592 miles from Barranquilla, and for small steamers to about 900 miles from its mouth. Magdalena River is the principal route from the sea to the interior of the country, and the work of clearing and canalizing both the upper and lower parts of the stream has greatly increased its importance and value as a means of communication and transportation. Bogota (q v), the capital, is largely dependent upon this river for means of communication with places on the coast. The largest tributary is Cauca, whose source is near that of the Magdalena, and part of its course is almost parallel with the main river. Short railroads connect some of the interior towns with the river and its tributaries.

**MAGDALENA** (mäg'da-lē'na) **BAY**, an inlet on the west coast of Lower California, in Mexico, one of the best harbors on the Pacific Coast. The inlet or arm of the sea is about 40 miles long and 12 miles wide and is protected by a long, low sand-bar. A town of the same name is situated on the harbor.

**MAGDALENE** (mäg'da-lén) **COLLEGE**, Cambridge, England, was founded in 1542 by Thomas, Baron Audley of Walden, in place of Buckingham College, established by Edward, Duke of Buckingham, in 1519, which had succeeded a monks' hostel for students founded in 1428. There are seven open fellowships on the foundation, and 12 open scholarships. There

are also several exhibitions. The annual Pepysian benefaction, value £50, is in the master's gift, and is usually bestowed upon poor and deserving students. The buildings consist of two courts, restored and altered in 1880, a chapel and hall dating from the 15th century and the Pepysian Library, built in 1688. Samuel Pepys, Charles Kingsley and Charles Stewart Parnell were educated at Magdalene College.

**MAGDALENIAN STAGE**, a period in the history of Paleolithic man in southwestern Europe when humanity lived largely in caves (wherefore these people are called "cave men"). They had attained a remarkably high degree of skill in the graphic arts, and adorned the interior of caverns with paintings and many objects with engravings of animals and other subjects. See **STONE AGE**.

**MAGDEBURG**, mag'dē-boorg, Germany, city, capital of the Prussian province of Saxony, on the Elbe, about 88 miles southwest of Berlin. The manufacturing and trade of Magdeburg are extensive, and its facilities for transportation by water and railroad are excellent. Among its industrial establishments are the Gruson Works, noted for their connection with the Krupp Works, the beet-sugar factories and a number of other establishments. It has a large number of excellent schools, gymnasia, a pedagogical seminary, art schools, industrial schools, etc. Magdeburg is a place of great antiquity, being a trading centre in the 9th century. It early distinguished itself in the Reformation. During the Thirty Years' War the town was besieged, stormed and sacked by Tilly, when 20,000 persons are said to have been murdered. Pop. (1925) 292,290. Consult Wolter, 'Geschichte der Stadt Magdeburg' (3d ed., Magdeburg 1901); Dodge, 'Gustavus Adolphus' (New York 1906).

**MAGDEBURG CENTURIES**, a Protestant history of the Christian Church by centuries, written in Latin in 1562 by Matthias Flacius of Magdeburg and other Lutheran theologians. It first appeared as 'Historia ecclesiæ Christi' (7 vols., Basel 1559-74); a German translation of the earlier part also appearing (Jena 1560-65). German Protestant princes bore the cost of publication. The 'Ecclesiastical Annals' of Baronius (q.v.) were a Catholic reply to the Magdeburg Centuries. See **PROTESTANTISM**.

**MAGDEBURG HEMISPHERES**, a celebrated invention of two hollow hemispheres, made of copper or brass, with their edges accurately fitted to each other, and one of them furnished with a stopcock. When the edges are rubbed over with grease, pressed tightly together and the globe thus formed exhausted of air through the cock, the hemispheres, which fell asunder before exhaustion, are now pressed together with immense force. If they are one foot in diameter they will, after exhaustion, be pressed together with a force of nearly a ton. This experiment was first performed by Otto von Guericke of Magdeburg, in 1654, at the imperial Diet at Ratisbon, to the astonishment of the Emperor Ferdinand III and the royal family.

**MAGELLAN**, ma-jěl'an, Ferdinand (Port. **FERNÃO DE MAGALHÃES**; Sp. **FERNANDO MAGALANES**), Portuguese navigator: b. probably at

Villa de Sabroza, Trazos-Montes, about 1480; d. Philippine Islands, 27 April 1521. He served in the Indies with distinction, especially at Malacca, and in 1514 saw service in Morocco. In resentment at his treatment by the king, who had not, he thought, duly rewarded his services, he, with Ruy Faleiro, a geographer and astronomer, renounced his nationality and offered his services to Spain. Magellan's proposal to seek a western route to the Moluccas was accepted by Charles V, and on 20 Sept 1519 he set sail from San Lucar de Barriameda in command of five vessels. He passed through the strait which bears his name (see **MAGELLAN, STRAIT OF**), and on 28 Nov 1520, reached the great ocean which he called the Pacific from its calmness. With his three remaining vessels he sailed by way of the Ladrões Islands to the Philippines, discovering Samar on 16 March 1521. He caused the king of Zebu to swear allegiance to Spain, but was killed in a fight with the natives of Matan. His vessel, the *Victoria*, under Sebastian del Cano, completed this, the first circumnavigation of the globe. The chief authority for the voyage is a work by Pigafetta, an Italian who accompanied Magellan. Consult Lord Stanley, 'The First Voyage Round the World' (1875); and Guillemaud, 'Ferdinand Magellan' (1891).

**MAGELLAN, Strait of**, the channel which separates the continent of South America from Tierra del Fuego and thus forms a communication between the south Atlantic and the south Pacific oceans. It is upward of 360 miles long, and is of difficult navigation. Its breadth varies exceedingly, the maximum being somewhat over 70 miles. There are a number of bays along the shore and at the southwestern end a group of several small islands. Punta Arenas is the best harbor. The strait was discovered in 1520 by Fernão de Magalhães or Magellan.

**MAGELLANIC CLOUDS**, in astronomy, called the Nubeculæ Major and Minor, from their cloud-like appearance, two oval masses of light in the southern hemisphere near the pole; often both visible to the naked eye. Sir J. Herschel describes them as consisting of swarms of stars, clusters and nebulae of every description.

**MAGENDIE**, François, frân-swâ mâ-zhôn-dê, French physician and physiologist: b. Bordeaux, 15 Oct. 1783; d. Paris, 8 Oct. 1855. He was the pupil of the celebrated surgeon, Boyer, and at 20 was appointed successively *aide d'anatomie* in the faculty of medicine, and demonstrator. He, however, subsequently devoted himself principally to the practice of medicine, was in 1819 elected a member of the Academy of Sciences and in 1831 succeeded Récamier in the chair of anatomy in the College of France, which he retained until his death. As an experimenter in physiology he occupied a high position and his experiments on living animals were at one time so numerous and involved so much suffering to the animals that the French government deemed it necessary to interfere. The results obtained, however, were of great importance, if they do not absolve him from the charge of cruelty. Among them may be named an original demonstration that the two roots of the spinal nerves are devoted to two separate functions; that the veins are organs of absorption; that strychnine acts upon the

spinal cord and contracts by tetanic spasm the nerves of respiration, thus inducing asphyxia; that food destitute of nitrogen is not nutritious, and that prussic acid is a valuable remedy in certain forms of cough arising from irritation in the lungs. He was a prolific author of medical works, the most important of which are 'Formulaire pour la préparation et emploi de plusieurs nouveaux médicaments' (1821), containing an account of the effects of certain plants then recently introduced into the materia medica, and which has been translated into all the languages of Europe; 'Précis élémentaire de physiologie' (1816-17), for many years an important manual for students; 'Leçons sur les phénomènes physiques de la vie' (1836-42); 'Leçons sur les fonctions et les maladies du système nerveux' (1839); 'Leçons sur le Sang' (1839); 'Recherches philosophiques et cliniques sur le liquide cephalorachidien ou cérébro-spinal' (1842).

**MAGENTA**, mā-jěn'ta, Italy, town in the province of Milan, 16 miles west of Milan, is situated in a grape region, in which the cultivation of grapes and mulberries and the manufacture of wine are the principal industries. Considerable raw silk is exported. It was the scene of a famous engagement 4 June 1859 between the French and Sardinian forces and the Austrians. The Austrians were defeated, largely through the superior tactics of General MacMahon of the French army. Pop. about 10,000.

**MAGENTA**, or **ANILINE RED**, a coal-tar dye, which consists of a mixture of the hydrochlorides of rosaniline and para-rosaniline. (See **ROSANILINE**). It may be prepared from aniline oil by digesting the aniline with arsenic acid or with nitrobenzene and ferrous chloride. When the oxidation is complete the rosaniline hydrochloride is precipitated by the addition of common salt in large excess, the hydrochloride being formed by double decomposition and thrown down because it is but sparingly soluble in salt solutions. Consult Benedikt, 'Chemistry of the Coal-Tar Colors.'

**MAGGIORE**, mād'jō'rě, Lake, one of the largest lakes in Italy, the *Lacus Verbanus* of the Romans, is situated for the most part in Italy, but also partly in the Swiss canton of Ticino. It is 39 miles in length and varies in breadth from one-half mile to five and one-half miles. It is 646 feet above the level of the sea and has a maximum depth of 1,158 feet. The river Ticino flows through it. In the southwestern expansion of the lake are the Borromean Isles (q.v.). On the north and west it is surrounded by granitic mountains, 7,000 feet high, on the south and east by vineyard-covered hills. On its shore are a large number of villages and cities noted for beautiful scenery and historic connections.

**MAGGOT**, the larva of a fly. (See **FLIES**).

**MAGI**, mā'ji (Lat. *Magus*, Gr. *Μαγος*), an Accadian term recently brought to light by Assyrian scholars; Accadian being the language of the people of Babylon and Media. The word signifies "august," "reverend," and was the title of their learned and priestly caste. The Semitic nations afterward dominant in Babylonia and Assyria adopted the learning and many of the religious observances of the early inhabitants, as also the name for the learned caste; and out of the Semitic form the Greeks

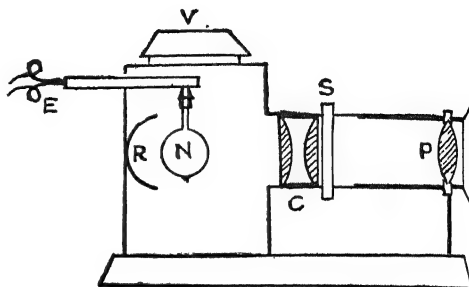
made *magos*. Under the Persian Empire the magi were not only the "keepers of the sacred things, the learned of the people, the philosophers and servants of God," but also diviners and mantics, augurs and astrologers. They were held in the highest reverence, and no transaction of importance took place without or against their advice. Hence their almost unbounded influence in both private and public life. Apart from the education of the young princes being in their hands, they were the constant companions of the ruling monarch. Zoroaster, in the course of his great religious reform, reorganized the body of the magi, chiefly by reinforcing the ancient laws as to their manner and mode of life, which was to be one of the simplest and severest, befitting their sacred station, but which had become one of luxury and indolence, and by reconstituting the original distinction of the three classes of *herbeds* ("disciples"), *mobeds* ("masters") and *destur mobeds* ("complete masters"). The food, especially of the lower class, was to consist only of flour and vegetables; they wore white garments, slept on the ground and were altogether subjected to the most rigorous discipline. The initiation consisted of the most awful and mysterious ceremonies, and was preceded by purification of several months' duration. As far as we can learn the principle of good and evil, as represented by Ormazd and Ahriman, was recognized, and belief in the coming of a savior, in the resurrection and in a future life was held. Gradually, however, their influence, which was all-powerful during the epoch of the Sassanian kings of Persia, began to wane, and, from being the highest caste, they fell to the rank of wandering jugglers, fortune-tellers and quacks, and gave their name to sleight-of-hand and conjuring tricks. But the name seems to have been also current as a generic term for astrologers in the East, as is evidenced by the New Testament narrative of the homage of the Magi to the Infant Christ. According to the narrative (Matt. ii, 1-12) the three wise men came from the East to Jerusalem, led by a star, which at length guided them safely to the place of the Nativity at Bethlehem, where they offered their gifts of gold, frankincense and myrrh. As the "Three Kings" their names became celebrated in the Middle Ages, and Bede distinguishes them as Kaspar, Melchior and Balthasar. (See also **PARSEES**; **ZOROASTER**). Consult Cumont, F. V. M., 'Oriental Religions in Roman Paganism' (Chicago 1911); id., 'Les mystères de Mithra' (3d ed., Brussels 1913); Moulton, J. H., 'Early Zoroastrianism' (London 1913).

**MAGIC**, or **BLACK ART**, was formerly the means of producing supernatural effects with the assistance of evil spirits. Doubtless in very remote time magic and religion were practically one, but the development of mentality brought about a differentiation. The fundamental fact was a strong belief in what was considered supernatural. Magic is of a more positive nature, but it carries with it the idea of taboo (q.v.). Supernatural effects were at an early period naturally associated with the exercise of the healing art. In the rudest stage of society this was confined to the women, and naturally arrived at the dignity of a profession in the hands of the older, whom

experience had gifted with superior skill. As their art was for the most part a mystery to themselves, they gradually came to be regarded as objects of fear as much as of hope, and magic medicines became synonymous with poison. The sorceress, poisoner and witch were in time reckoned identical (See WITCHCRAFT). Medea, Persia, and the neighboring countries, famous for their knowledge of astronomy and astrology, are described as the chief seats of the ancient Magi, whose doctrine seems to be, in part, of great antiquity. This doctrine represented opposition or strife as the parent and original cause of all things. After the opposition between light and darkness, Ormuzd and Ahriman, was established, the whole series of finite beings, the whole sensual world, proceeded from this constant struggle of light and darkness, good and evil. The change of day and night, light and darkness, the whole series of ages, time itself, is only a consequence of this struggle, in which sometimes light, sometimes darkness, appears victorious, until finally light shall conquer for ever. If all finite things stand under the influence of preserving and destroying powers in nature, it is clear that he who could master these powers could dispose at his pleasure of the things subject to them; and the doctrine of the Magians was that by prayer and a true knowledge of those laws of opposition, love and hatred, light and darkness, such power could be obtained; and that thus also it was possible to pry into futurity. But it was believed that as the world became sinful the light of the ancient doctrine of the Magi was obscured, and those who bore the name became at last only evil-disposed sorcerers. One important branch of their art was now the excitement of love by potions and enchantments. Their love potions consisted partly of ingredients which are still known to the physicians as stimulants, partly of parts of animals who had died longing for food or air, or the saliva of hungry dogs, and other still more disgusting substances. Magic at this period also occupied itself with fortune telling, calling up the dead and bewitching by the look—a superstition which is found existing in the processes against witches in modern times. It can hardly be doubted that the art of the ancient magicians was founded to a considerable degree upon a knowledge of the powers of nature superior to that of the general public. At one time magic was greatly studied in Europe, and many distinguished names are found among its students and professors. The most famous of these are Albertus Magnus, Roger Bacon, Cornelius Agrippa, Michael Nostradamus, John Dee, William Lilly, etc. While magic is a thing of the past there are still many survivals to be found today among the superstitions held by a large number of individuals. Consult Lang, A., *Magic and Religion* (New York 1901); Marrett, R. R., *The Threshold of Religion* (New York 1914); Frazer, James G., *The Magic Art* (New York 1925); Thorndike, Lynn, *History of Magic and Experimental Science During the First Thirteen Centuries of Our Era* (New York 1929); Mackay, Charles D., *Memoirs of Extraordinary Popular Delusions* (New York 1929).

**MAGIC LANTERN**, an instrument used for projecting highly magnified images upon a screen or other adapted surface. A basic type

which is shown in the accompanying diagram represents a longitudinal section through a magic lantern fitted with a nitrogen lamp (N), attached to lighting wires (E), and provided with a pair of plano-convex condensing lenses (C). The reflector is indicated at R; the



slot in which the slides are inserted at S; the double convex projecting lens at P; and the ventilating chimney, to carry off excessive heat, at V.

The magic lantern is used to show magnified representations of transparent pictures painted or photographed on glass. The projection is said to be diascopic if the light traverses the object and episcopic if by reflected light. The size of the image will depend upon the brilliancy of the light, hence the circle which it is capable of illuminating. Secondly the size will depend upon the distance of the lantern from the screen, and the ability to focus the image thereon. See STEREOPTICON.

**MAGIC MIRROR OF JAPAN**, some few specimens of the small, round bronze mirrors made in Japan which differ from others by reflecting upon a white screen the raised figures on the back of the mirror when a strong beam of light is thrown upon the polished convex surface. The mirrors are made of bronze with a polished, slightly convex face and the backs are decorated with raised ornaments. The characteristics of the magic mirrors was long a mystery, as much to the makers as to others, the peculiarity being apparently accidental. The Japanese themselves, while possessing a reverence for all mirrors, placed no undue value upon the magic mirrors. The Chinese noticed the phenomenon as early as the 11th century and gladly paid fabulous prices for such as possessed the trait. The physical nature of the mystery was first revealed by the French physicist, Charles Cléophas Person, in 1847. He observed that the convex surface of the magic mirrors was not uniform, the portions in front of the ornamental figures being plane, and therefore reflecting direct rays, while the convex portions gave divergent rays and so made the reflection of the images indistinct. The theory was worked out by W. E. Ayrton and J. Perry, who discovered the phenomenon to be due to peculiarities in the composition of the metal in some of the mirrors, the pressure used in polishing the thicker portions containing the raised ornaments resulting in a difference on the reflecting surface too minute to affect the reflection under ordinary light, but plainly apparent when thrown on a screen by a bright light.

**MAGIC MOUNTAIN, The.** In this long and brilliant novel (1924) Thomas Mann (qv) paints a symbolic picture of the dissonance and struggle between two seemingly irreconcilable forces in man's nature, the hypnotic lure of the esthetic, estranging the artist and the abstract thinker from the practical world of reality and robbing him of the strength for action, on the one hand, and on the other his sense of responsibility to that world and his longing for association with the commonplace activities and people of the world of reality. In this dualism Mann sees the disease which afflicted the German middle class before World War I.

In a luxurious tuberculosis sanitarium on a high mountain in Switzerland a group of characters from all parts of the world is gathered, from as far west as Daghestan, from the Graeco-Roman world of Mediterranean culture, from Holland, Germany and elsewhere. Into this motley assembly comes the hero, or rather the central figure (for he is designedly represented as a very ordinary bourgeois individual), Hans Castorp, not at first as a patient. He comes to visit a cousin, planning to stay three weeks, and remains seven years. The author's choice of scene was in itself an almost magical stroke of genius, for the rarified air of the mountain, the boundless horizons of snow, the enforced inactivity of the patients, and the disease itself convincingly symbolize the remoteness from the real world below (the Flatland) and suggest the devitalizing effect of a life of exclusively romantic, esthetic, or metaphysical speculation.

Hans Castorp is constantly exposed to the impact of the divergent attitudes of these characters toward life, chiefly by way of dialectic exchanges and conversations rather than action, for there is no plot in the usual sense. Each of them tries to persuade Hans toward his own particular way of life: the practical realist, the humanist, the romanticist, the sensualist, etc. As they come and go (the scene being what it is, Hans repeatedly finds himself beside a death-bed) his vacillation persists, until, with the outbreak of World War I, he hurries down to the Flatland to fight for his country, his resolve suggesting that he has after all maintained something of a balance between the "two souls that dwell within his breast."

The novel ends on a questioning note which Mann himself calls "the philosophic renunciation

**MAGIC SKIN, The or WILD ASS' SKIN** (Fr. *LA PEAU DE CHAGRIN*), one of the most famous of the novels which make up the imposing series of *The Human Comedy* (*La Comédie Humaine*) by Honoré de Balzac (qv). It was also one of the earliest (1831). While it offers abundantly that penetrating observation of human conduct and character and that minute record of the myriad little concrete details of circumstance and environment that condition and explain them, that mark the realism of Balzac and make his work so full of what the French critic Hippolyte Adolphe Taine called "human documents," it is essentially an allegory and enforces, under the form of a magic symbol, a profoundly moral truth. The magic skin is a piece of shagreen bearing this inscription: "Possessing me thou shalt possess all things, but thy life is mine, for God hath so willed it. Wish and thy wishes shall be fulfilled; but measure thy desires, according to the life that is in thee. This is thy life, with each wish I must shrink even as thy own days. Wilt thou have me? Take me. God will hearken unto thee. So be it." The young man who becomes the possessor of this talisman in a moment of suicidal desperation demands of it a princely fortune and sees himself with the power to have every wish gratified. With each exercise of his power, however, he observes with horror that the magic skin continuously shrinks and that his demands on its power bring with them less and less satisfaction. The story is not of even interest throughout, and the narrative of the youth of the hero, which takes up half of the book, may seem somewhat long drawn out. But it is one of the best examples of Balzac's peculiar power of seeing facts and illuminating them with ideas.

See also *ALKAHEST, THE*; *AUBERGE ROUGE L'*; *CHOUANS, THE*; *COMÉDIE HUMAINE, LA*; *EUGÉNIE GRANDET*; *CÉSAR BIROTEAU*; and *PÈRE GORIOT*.

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**MAGIC SQUARES.** A magic square is a square divided into equal smaller squares, each containing a term of a series of integers, the sums of the numbers in any horizontal, vertical

A

3	4	1	5	2
2	3	4	1	5
5	2	3	4	1
1	5	2	3	4
4	1	5	2	3

B

15	0	20	5	10
0	20	5	10	15
20	5	10	15	0
5	10	15	0	20
10	15	0	20	5

C

18	4	21	10	12
2	23	9	11	20
25	7	13	19	1
6	15	17	3	24
14	16	15	22	8

of much that I once loved . . . a book of pedagogic self-discipline." See also *BUDDENBROOKS, THE*, and *JOSEPH AND HIS BROTHERS*.

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and diagonal line being the same.

The construction of such squares is an amusement of great antiquity. They were known in India and China before the Christian Era, and a knowledge of them was introduced into Europe by Moschopolus who flourished in



Constantinople early in the 15th century. Talismanic virtues and occult properties were ascribed to them by the ancients. They were engraved on metal and stone and worn as amulets, as in India at the present day. A magic square of the fourth order is engraved on the gate of the fort at Gwalior in that country. Mediæval astrologers and physicians were filled with superstitions in regard to magic squares. They associated the squares of the orders 3, 4, 5, 6, 7, 8 and 9 with the astrological planets Saturn, Jupiter, Mars, the Sun, Venus, Mercury and the Moon. A square containing one cell symbolized the unity of the Deity; one of the second order, not being possible, signified the imperfection of the elements air, earth, fire and water. Albert Durer's well-known painting, 'Melancholy,' contains a magic square of the fourth order, doubtless because of its supposed mystical significance. They have been made the subject of elaborate research by various investigators but the world is indebted chiefly to the French mathematicians for the development of the theory of magic squares.

In this article general rules for the construction of magic squares of any order will be given, illustrated by particular examples. The squares produced by these methods by no means exhaust all possible arrangements, but the rules furnish squares in great number and variety.

Magic squares are divided into two general classes according as the numbers of cells on a side is odd or even. Even squares are subdivided into doubly even, i.e., when the root is divisible by 4, and singly even, when the root is divisible by 2 but not by 4. A horizontal line of cells is called a row, and a vertical line a column. Two cells in a row equidistant from the ends are termed a *horizontal pair*, and two cells in a column equidistant from the ends are termed a *vertical pair*. In a series of natural numbers any two equidistant from the ends are said to be complementary.

**Magic Squares of an Odd Order.**—La Hire's method for constructing odd magic squares requires the formation of two auxiliary squares A and B. For a square of the fifth order diagram A is formed with the series of natural numbers 1, 2, 3, 4 and 5 as follows: First, put 3 (the mean of the numbers) in the top left-hand corner cell, and the numbers 1, 2, 4 and 5 in the cells of the top row in any order. Next, the number in each cell of the top row is repeated in the cells of a diagonal sloping downward to the right. The cells filled by the same number form a *broken diagonal*.

Form a new square by making the left-hand column of A (beginning with its bottom number) the first row in the new square, and so on. Next, instead of the numbers 1, 2, 3, 4 and 5, substitute respectively the numbers 0, 5, 10, 15 and 20, thus producing square B. In each cell of square C place the sum of the numbers in similarly situated cells of squares A and B. The result is a magic square of the fifth order. Any magic square of an odd order can be constructed in a similar manner.

**La Loubère's Method.**—In order to construct a magic square of an odd order by this method, place 1 in the middle cell of the upper row, and using the series of natural numbers (any arithmetical series will answer) proceed always diagonally upward to the right, except when the edge of the square or a cell already filled is reached. When a number would fall

D

30	39	48	1	10	19	28
38	47	7	9	18	27	29
46	6	8	17	26	35	37
5	14	16	25	34	36	45
13	15	24	33	42	44	4
21	23	32	41	43	3	12
22	31	40	49	2	11	20

outside the square, carry it to the extreme cell in that row or column in which the cell outside would fall. When a cell is reached that is already filled or when the righthand upper corner cell is reached, place the number in the cell just below. The magic square D is formed by this rule. It may be remarked here that from any magic square, whether odd or even, a number of other magic squares can be formed by the mere interchange of the row and column which intersect in a diagonal with the row and column which intersect in some other cell in the same diagonal. In this way from each magic square of the fifth order 48 other magic squares can be formed.

**Magic Squares of an Even Order.**—To construct a magic of the sixth order proceed according to the following rule which is a modified form of a method due to La Hire.

E

1	5	4	3	2	6
6	2	4	3	5	1
6	5	3	4	2	1
1	5	3	4	2	6
6	2	3	4	5	1
1	2	4	3	5	6

F

0	30	30	0	30	0
24	6	24	24	6	6
18	18	12	12	12	18
12	12	18	18	18	12
6	24	6	6	24	24
30	0	0	30	0	30

G

1	35	34	3	32	6
30	8	28	27	11	7
24	23	15	16	14	19
13	17	21	22	20	18
12	26	9	10	29	25
31	2	4	33	5	36

As in his rule for odd squares two auxiliary squares are employed. For a square of the sixth order the first auxiliary square E is constructed as follows: First, fill the cells of the

H

1			4
	6	7	
	10	11	
13			16

I

1	15	14	4
12	6	7	9
8	10	11	5
13	3	2	16

two diagonals with the numbers 1, 2, 3, 4, 5 and 6, beginning on the left-hand side. Second, fill each of the remaining cells of the first column with the same number as that already in two of them or with the complementary number, i.e., with  $a$  or  $a-6$  in any way, provided that there are the same number of these numbers in the column. Third, cells horizontally paired with those in the first column are filled with the complementary numbers. Fourth, the remaining cells in the second and third columns are filled in an analogous way to that in which the cells in the first column were filled; and then the cells horizontally paired with them are filled with the complementary numbers. Observe that in the case of a singly even magic square it will be necessary in constructing E to take care in the second step that in every row at least one cell which is not in a diagonal shall have its vertically paired cell filled with the same number as itself.

The second of the auxiliary squares F is constructed as follows: Rewrite square E, making another square F in which the left-hand column of E (beginning with its top number) becomes the top row of the new

K

71	64	69	8	1	6	53	46	51
66	68	70	3	5	7	48	50	52
67	72	65	4	9	2	49	54	47
26	19	24	44	37	42	62	55	60
21	23	25	39	41	43	57	59	61
22	27	20	40	45	38	58	63	56
35	28	33	80	73	78	17	10	15
30	32	34	75	77	79	12	14	16
31	36	29	76	81	74	13	18	11

square, the second column of E becomes the second row of the new square, and so on. Then instead of each of the numbers 1, 2, 3, 4, 5 and 6, substitute the corresponding number

from the series 0, 6, 12, 18, 24 and 30. The result is square F. Next, if in each cell of G the sum of the numbers in the corresponding cells of squares E and F be placed, the required magic square is formed.

The following method is applicable to the construction of doubly even magic squares only. Imagine the square to be divided into squarelets of four cells each, the four central cells comprising one; and conceive these squarelets to be of two kinds, alternating with each other. Place 1 in the left-hand upper corner cell, and proceed horizontally to the right counting a number to each cell, but filling successively the squarelets of one kind only. When the end of one row is reached turn to the left-hand cell of the next row and again advance, filling cells of one kind as before, and so on. For the

L

1	63	62	4	5	59	58	8
56	15	49	48	19	44	20	9
55	47	25	39	38	28	18	10
11	22	36	30	31	33	43	54
53	42	32	34	35	29	23	12
13	24	37	27	26	40	41	52
14	45	16	17	46	21	50	51
57	2	3	61	60	6	7	64

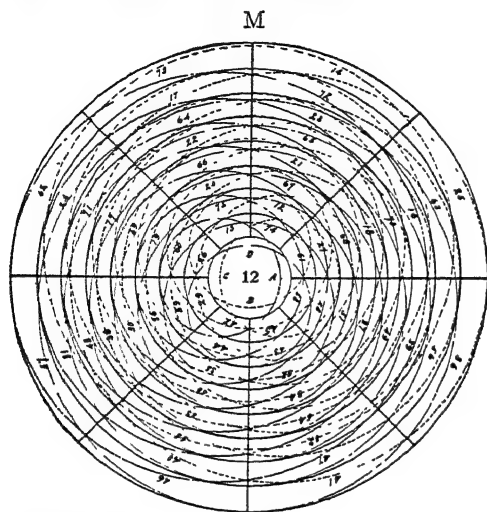
4-square the result of this operation is seen in diagram H

Next, begin with the right-hand lower corner cell, considering 1 as falling on it but not writing the number, and proceed regularly to the left, row after row, filling the empty cells with the numbers belonging to them but not writing numbers in the cells already filled. The result of the two operations is the magic square I. This is the most perfect magic square of the fourth order. Not only do the horizontal, vertical and diagonal lines of numbers sum up 34, but there are 38 other ways in which sets of four numbers may be selected whose sum is 34, making 48 ways in all. By the interchange of rows and columns according to the rule enunciated above, other squares may be formed, but none so perfect as this.

The above methods for the construction of magic squares are, in the writer's opinion, the simplest of all those proposed. Limited space permits only two other methods to be noticed, which, however, are applicable to only a limited class of cases. The first relates to the construction of composite magic squares. For example a square of 81 cells may be considered as made up of 9 smaller squares each containing 9 cells. The magic square in diagram K is built up by this method.

The other method consists in surrounding a magic square with a border of cells, constituting what is termed a concentric square. In

this way from the magic square of the third order can be built up squares of any odd order; and similarly even magic squares of any order may be built up from the magic square of the

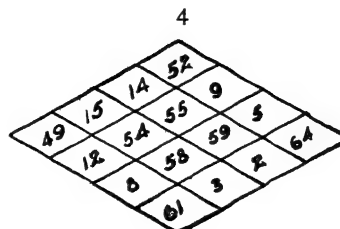
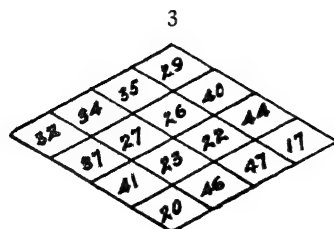
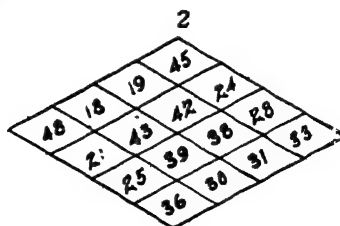
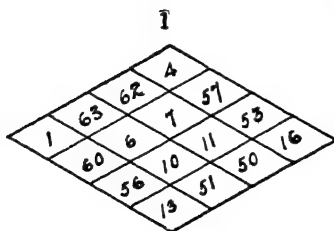
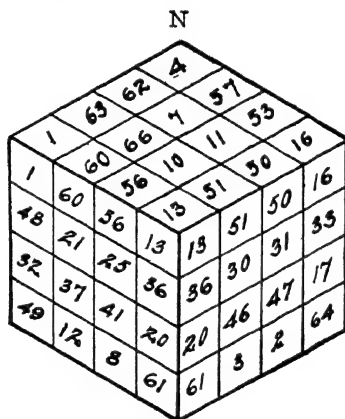


fourth order. Diagram L is constructed this way

To Dr. Franklin is due the construction of

diagram M which he called *The Magic Circle of Circles*. (See the illustration herewith). It is composed of a series of numbers from 12 to 75, inclusive, placed in eight concentric circular spaces and arranged in eight radii, with the number 12 in the centre. Like the centre this number is common to all the circular spaces and to all the radii. The numbers are so placed that the sum of all those in any of the circular spaces, together with the central number 12, is 360, the number of degrees in a circle. The numbers in each radius together with the central number make 360. The numbers in half of any of the circular spaces taken above or below the horizontal diameter, with half the central number, make 180, the number of degrees in a semi-circle. If any four adjoining numbers be taken, as if in a square, in the radial division of the circular spaces, the sum of these with half the central number is 180. There are, moreover, included five sets of other circular spaces bounded by circles which are eccentric with respect to the common centre. The centres of the circles which bound them are at A, B, C and D. The numbers in these eccentric circular spaces possess the same magic properties as the numbers in the first-mentioned circular spaces.

Magic squares have been developed into figures of three dimensions termed magic cubes. Diagram N is a magic cube of the fourth order. 1, 2, 3 and 4 are horizontal sections of N



numbered from the top down. There are 52 ranks of numbers in this cube which sum up 130, namely, 16 vertical columns, 16 horizontal rows from front to back, 16 horizontal rows from left to right, and four diagonal lines uniting four pairs of opposite corners. The sum of any two numbers which are diametrically opposite each other and equidistant from the

O

30	21	6	15	28	19
7	16	29	20	5	14
22	31	8	35	18	27
9	36	17	26	13	4
32	23	2	11	34	25
1	10	33	24	3	12

centre of the cube equals 65; and the sum of the numbers in the 48 sub-squares of four cells each is 130.

Among curiosities in magic construction may be mentioned the following: The square in diagram O is filled with the natural numbers in the path of a knight returning to its starting cell, and possesses the property that the difference of any two numbers equidistant from and on opposite sides of the centre is 18. It is due to Euler, the famous mathematician.

W. S. Andrews in his *Magic Squares and Cubes* gives a magic cross filled with 145 numbers, with the statement that it contains the almost incredible number of 160,144 different columns of 21 numbers whose sum is 1,471.

A certain class of magic squares has received much attention in recent years. They are called *Nasik squares* in England, and in France *diabolic squares*. They are formed so that the sums along certain lines, such as all the rows, columns, diagonals and broken diagonals are the same. Diagram P is a unique example, as it is composed entirely of prime

P

1013	251	449	911	881
839	1301	941	113	311
41	173	701	1229	1361
1091	1289	461	101	563
521	491	953	1151	389

numbers. It is due to the ingenuity of C. D. Schulldham and appeared in a recent number of *The New York Sun*.

This square possesses the Nasik properties above mentioned, and in addition the sum of any two numbers equidistant from the centre and opposite each other is 1,402, or twice the central number.

Magic rectangles, crosses, stars, cylinders, etc., have been constructed, but want of space forbids any further notice of them.

Varying estimates as to the possible number of magic squares of a given order have been made by different investigators. W. W. Rouse Ball in his *Mathematical Recreations* thinks that those of the fifth order probably exceed half a million. Theodor Hugel in his *Die Magischen Quadrate* has calculated that the paper required to contain all the magic squares of the 13th order would cover the whole surface of the earth about 348 times.

As to the scientific value of magic squares the following paragraph is quoted from a paper by Maj. P. A. McMahon, F.R.S., published in *Proceedings of the Royal Institution of Great Britain*, 1892: "What was at first merely a practice of magicians and talisman makers has now for a long time become the serious study of mathematicians. . . . It was considered possible that some new properties of numbers might be discovered. . . . This has in fact proved to be the case, for from a certain point of view the subject has been found to be intimately connected with great departments of science such as the Infinitesimal Calculus, the Calculus of Operations, and the Theory of Groups."

A. B. NELSON.

**MAGIC WOOD**, a wood used in cups which were sent to Spain in the 16th century as presents to princes, and were highly valued first as curiosities and later as a means of health. The "magic" consisted in the fact that water put into the cup speedily turned a rich blue. Although it has been a subject of inquiry ever since it is not until lately that the wood has been identified botanically, and the cause of its effect on water is still unknown. The identification was made by William E. Safford, of the United States Department of Agriculture, who described the result of his investigation in *The American Museum Journal* (New York, Vol. XVIII, p. 48, 1918) with a colored illustration. He has discovered that two separate kinds of wood are involved in the history of this matter. The description of the early writers mostly refer to a shrub of Mexico called sweet-wood (*Eysenhardtia polystachia*); but the cups were made of wood of the gigantic narra tree (*Pterocarpus indicus*) of the Philippines. Although very different botanically, both produce effects on water virtually indistinguishable; and as in early times most of the communication between Spain and the Philippines was by way of Mexico, the double confusion as to origin easily arose. When water was poured into the narra cups, or chips of the Mexican sweet-wood were infused in a glass, the water became fluorescent in beautiful colors. In the early accounts of the cups (*Pterocarpus*) it was said that the water at once turned blue, which deepened if left to stand for some time. When this water was poured into a flask and held to the light it appeared perfectly clear, "but if you move this glass phial toward a more shady place the liquid will assume a most delightful greenness, and if to a still more shady place, a reddish color. . . . In the dark, however, or in an opaque vase, it will once more assume its blue color." As was customary in those days this changeably tinted

water was regarded as having medicinal value, especially in any disorder of the kidneys, and was carried to Europe in great quantities and thus used under the name *lignum nephriticum*. Mr. Safford got similar colors from the Mexican shrub. A few small chips in ordinary tap-water tinged it a golden yellow, which soon deepened to orange. When the glass was held against a dark background the liquid glowed with a beautiful peacock fluorescence very much like that seen in quinine. Placed partly in a sunbeam, half of the liquid appeared yellow and the other half blue; «and when the sunlight was focussed upon it by the lens of a common reading-glass the vial seemed to be filled with radiant gold penetrated by a shaft of pure cobalt.» The most ingenious investigation has failed thus far to reveal the cause of this fluorescence.

**MAGIE**, ma-gē', William Francis, American physicist: b. Elizabeth, N. J., 14 Dec. 1858; d. Princeton, N. J., 6 June 1943. Graduating from Princeton in 1879, he afterward studied at the University of Berlin. He was instructor in Physics at Princeton, 1879-84; became professor in 1885; and was dean of the faculty, 1912-25. He was a member of the American Philosophical Society; in 1910 was president of the American Physical Society; and published 'The Second Law of Thermodynamics' (1899); 'A course of Lectures on Physics' (1904); 'Principles of Physics' (1911). He translated Christiansen's 'Elements of Theoretical Physics' (1896), and revised Anthony and Brackett's 'Physics' (1896).

**MAGINN**, ma-gin', William, Irish author: b. Cork, Ireland, 11 Nov. 1793; d. Walton-on-Thames, 20 Aug. 1842. He was graduated from Trinity College, Dublin, in 1811, and was for some years a schoolmaster. In 1819 he became a contributor to *Blackwood's Magazine* and was in turn Paris correspondent of the *Representative*, junior editor of the *Standard* and one of the founders of *Fraser's Magazine*, his contributions to which made it famous. Consult Krans, 'Irish Life in Irish Fiction' (New York 1903).

**MAGINNIS**, Charles Donagh, American architect: b. Londonderry, Ireland, 1867. He was educated at Cusack's Academy, Dublin, and won Queen's prize in mathematics at South Kensington, London, in 1883. He came to the United States in 1885, engaged in practice as an architect at Boston in 1886 and became a member of the firm Maginnis and Walsh. He is especially interested in ecclesiastical architecture. He is a member of the Municipal Art Commission, Boston, and of the Massachusetts State Art Commission. He is author of 'Pen Drawing' (1898).

**MAGINOT LINE**. See FORTIFICATIONS.

**MAGISTRATE**. See COURT.

**MAGLIABECCHI**, Antonio, ān-to'nē-ō māl-yā-bēk'ē, Italian bibliographer: b. Florence, 28 Oct. 1633; d. there, 4 July 1714. In the early part of his life he was engaged in the employment of a goldsmith, which he relinquished to devote himself to literary pursuits. Through unremitting application he acquired a multifarious stock of erudition, which made him the wonder of his age. Duke Cosimo III made Magliabecchi keeper of the library which he had collected and gave him free access to the Laurentian Library and the Oriental MSS., and of

the latter collection he published a catalogue.

**MAGLIONE**, Luigi Cardinal, Catholic churchman and diplomat: b. Casoria, Archdiocese of Naples, 2 March 1877. His brother, a priest, supervised his early education. Later he entered a Jesuit school at Naples and from there went to the Gregorian University, Rome. He received his degrees in philosophy and theology at the Gregorian, and later received his degree in canon law at the University of St. Apollinaris. In 1901 he was ordained priest and in 1905 began a two-year course in preparation for the Vatican diplomatic service at the Academy of Noble Ecclesiastics. In 1908-18 he was professor at the Academy of Noble Ecclesiastics, and in the latter year was sent as representative of the Holy See to Switzerland. In 1920 he was created titular Archbishop of Caesarea in Palestine and was made nuncio to Switzerland. In October 1926, Archbishop Maglione became nuncio to Paris, where he remained nine years. His work in Paris was so appreciated by the French government that he was awarded the Grand Cross of the Legion of Honor. On 16 Dec. 1935, Pius XI created him cardinal. Pope Pius sent his red hat for presentation to him by President Albert Lebrun in accordance with accepted custom when affairs at the nunciature prevented his return to the Vatican to receive it. Despite the request of the French government that he be left at Paris, Pope Pius recalled him to Rome and appointed him prefect of the Congregation of the Council. On 11 March 1939, Pope Pius XII appointed Cardinal Maglione his Secretary of State, the office that he himself had occupied under Pius XI. D. Casoria, 22 Aug. 1944.

**MAGMA**, rock which is in a fluid condition due to heat, and commonly said to be molten. For a discussion of the modern conception of a magma see the article on ROCKS. See also VOLCANOES and the section on *Volcanism* in the article on GEOLOGY.

**MAGMATIC SEGREGATION**. See VEIN, MINING.

**MAGMATIC STOPING**, the process by which a fluid rock mass (magma) heats the overlying rock till it fractures and portions break off and settle into the magma, there to be assimilated or to remain as solid blocks or Xenoliths. The process is believed to be important in the mechanics of igneous intrusion. See ASSIMILATION and XENOLITHS.

**MAGMATIC WATER**. See GROUND WATER.

**MAGNA CHARTA**, mäg'na kār'ta, or GREAT CHARTER OF LIBERTIES, a famous document extorted from King John of England by the confederated barons in 1215. The barons who with their followers composed «the Army of God and the Holy Church» were the whole nobility of England; their followers comprehended all the yeomanry and free peasantry, and the accession of the capital was a pledge of the adherence of the citizens and burgesses. John had been obliged to yield to this general union, and in June both parties encamped on the plain called Runnymede, between Windsor and Staines, on the banks of the Thames, and conferences were opened between the king and his barons. The preliminaries being agreed upon, the barons presented heads of their grievances and means of redress, in the nature of the bills now offered by both



houses for the royal assent. The king, according to the custom which then and long after prevailed, directed that the articles should be reduced to the form of a charter, in which state it issued as a royal grant. The charter was signed on 15 June. Copies were immediately sent to every county or diocese and ordered to be read publicly twice a year. To secure the execution of the charter John was compelled to surrender the city and Tower of London, to be held by the barons till 15 August, or until he had completely executed the charter. King John, though he signed the charter, had no intention of keeping it; he appealed to the Pope, who in a bull declared *Magna Charta* "null and void" and excommunicated the barons who had obtained it; and he was conducting a war against his barons when death overtook him in May 1216. Many parts of the charter were pointed against the abuses of the power of the king as lord paramount; the tyrannical exercise of the provisions of the forest laws was checked, and many grievances incident to feudal tenures were mitigated or abolished. But besides these provisions it contains many for the benefit of the people at large, and a few maxims of just government, applicable to all places and times, of which it is hardly possible to overrate the importance of the first promulgation by the supreme authority. One of these provided that taxes should not be imposed without the consent of the Common Council of the realm. The 39th article contains the celebrated clause which forbids arbitrary imprisonment and punishment without lawful trial. This article contains the writ of *habeas corpus* and the trial by jury, the most effectual securities against oppression which the wisdom of man has devised, and the principle that justice is the debt of every government, which cannot be paid without rendering law cheap, prompt and equal. The provision which directs that the Supreme Civil Court shall be stationary, instead of following the king's person, was an important safeguard of the regularity, accessibility, independence and dignity of public justice in Great Britain. Confirmation of the Great Charter was frequently made by English monarchs. Consult Stubbs, '*Constitutional History of England*' (1897).

**MAGNA GRÆCIA**, grē'shī-ā, "Great Greece," the name commonly given in ancient times to that part of southern Italy which was inhabited by Greek colonists. Apparently the name was in use as early as the time of Pythagoras (586-506 B.C.) Strabo includes the Greek cities of Sicily under the appellation, but the name refers generally only to the Greek cities in the south of Italy, including those on the shores of the Tarentine Gulf and the Bruttian Peninsula, with Velia, Posidonia and Laüs, on the west coast of Lucania. The name was not at first territorial or coextensive with any region, but applied merely to the Greek cities on the coasts, Cumæ was the most ancient of all the Greek settlements in Italy, but from its remote position it was in a great measure isolated from the later Greek settlements. The Achæans were the real colonizers of southern Italy, their first settlement being Sybaris (720 B.C.). A few years later (708 B.C.) Spartan colonists founded Tarentum, and to counteract their encroachments the Achæans founded

Metapontum, on the frontier of the territory of the Tarentines, between 700 and 680 B.C. The Locrians founded further south the city known as Locri Epizephyrii, nearly contemporary with Crotona (710 B.C.) The Chalcidic colony of Rhegium, on the Sicilian Straits, claims to have been more ancient even than Sybaris. The Greek cities on the shores of Bruttium and Lucania were, Velia excepted (540 B.C.), offshoots from the earlier settlements, and not founded by colonists direct from Greece. The arrival of Pythagoras at Crotona (530 B.C.) produced a marked change in the cities of Magna Græcia, and led to the introduction of great political changes. He and his followers were ultimately expelled from Crotona. Very little of the early history is known. The coast cities were essentially mercantile. Trade was well developed, and in the 6th century there was an extensive commerce, especially with Greece. The colonists who pushed to the interior subdued the opposing natives and developed the fertile plains into agricultural settlements. There was a high development of intellectual life. At various times there were temporary alliances among the cities, but never a permanent federation. Warfare was common and bitter and to this fact is largely due the decline of the territory. Magna Græcia comprised the provinces of Campania, Apulia, Iapygia, Lucania and Bruttium.

**MAGNALIA CHRISTI AMERICANA**, mäg-nā'li-a krī's'tī ā-mer-ī-kā'na, an 'Ecclesiastical History of New England, from 1620 to 1628,' published by Cotton Mather in 1702. It treats more extensively of the early history of the country than its title seems to indicate, and is divided into seven books: the first treating of the early discoveries of America and the voyage to New England; the second is 'Lives of the Governors'; the third, 'Lives of many Reverend, Learned and Holy Divines'; the fourth, 'Of Harvard University'; the fifth, 'The Faith and the Order in the Church of New England'; the sixth, 'Discoveries and Demonstrations of the Divine Providence in Remarkable Mercies and Judgments on Many Particular Persons'; the seventh, 'Disturbances Given to the Churches of New England'. In the sixth book the author gives accounts of the wonders of the invisible world, of worthy people succored when in dire distress, of the sad ending of many wicked ones and of the cases of witchcraft at Salem and other places.

**MAGNENTIUS**, mäg-nēn'shī-ūs, **Flavius Popilius**, Roman imperial usurper of the West: d 11 Aug 353. Having been entrusted by Constantius with a high military command he availed himself of his office to plot the emperor's overthrow. On 18 Jan 350, presenting himself in imperial purple at a great banquet given by one of the conspirators at Autun, he was saluted with the title of Augustus; and assassins sent for the purpose having dispatched Constantius, Magnentius was acknowledged as emperor by all the western provinces except Illyria. Constantius, on hearing of his brother's murder, hastened from the confines of Persia and defeated Magnentius (351). These disasters led to the defection of all the countries that had recognized the usurper, who thereupon committed suicide. Constantius then became master of the entire empire.

**MAGNESIA**, the oxide of magnesium,  $\text{MgO}$ . See **MAGNESIUM**.

**MAGNESITE**, a mineral (magnesium carbonate,  $\text{MgCO}_3$ ; carbon dioxide 52.4 per cent, magnesium oxide 47.6 per cent theoretically pure) in which silica magnesium compounds, calcium carbonate and iron oxide are always present, with a hardness of 30 to 35 (Mohs scale) and a specific gravity of 3.0-3.1.

**Occurrence.**—(1) In crystalline form as magnesite marble or "spathic", as a replacement of dolomite  $\text{MgCa}(\text{CO}_3)_2$ , commonly as a resultant of hydrothermal activity by magnesium solutions associated with granitic intrusives. There are deposits in Manchuria, Russia, Austria, Czechoslovakia, Brazil, British Columbia, Quebec, Washington, and Nevada. Colors range widely through the effect of oxidized impurities—blue-black, light red, mottled gray, gray to white. (2) As sedimentary beds it is cryptocrystalline, dense and exceedingly fine. Usually shallow the beds may be of great lateral extent, typical of desert conditions as in San Bernardino and Kern counties, California, and Clark County, Nev. The color is white to gray-white. (3) As veins and replacements in other rocks, notably in the ultrabasic intrusions of California. Associated with serpentine ( $\text{H}_2\text{MgSi}_2\text{O}_6$ ) it occurs in the coastal and Sierra Nevada ranges, also in Baja California (Mex.) and Venezuela deposits. Amorphous, the color is porcelain white.

**Uses.**—Chiefly for refractory brick and sintered grains as  $\text{MgO}$  after "dead burning" above  $2900^\circ\text{F}$ . The light burned (caustic) powder is used in oxy-chloride flooring especially on ship decks and in public buildings, as a fertilizer addition and as a rubber filler. Synthetic magnesia is produced for the same uses from various brines including sea water

C. S. SARGENT,  
*General Manager, Northwest Magnesite Company.*

**MAGNESIUM**, a metallic element whose compounds are abundant and widely distributed, but which does not occur in nature in the metallic form. Magnesium resembles calcium in its chemical deportment, and the oxides of the two metals were long confused with each other. Metallic magnesium was first prepared by Davy, in 1808, both by electrolysis and by the reduction of white-hot magnesia in an atmosphere of potassium vapor. In 1830 Bussy obtained a larger and purer yield of the metal, by heating a mixture of potassium and anhydrous magnesium chloride to redness. It is commercially produced by the electrolysis of the fused anhydrous chloride or the direct reduction of the oxide by ferrosilicon or carbon. Pure magnesium is silvery-white in color, lustrous and moderately hard. It may be hammered, rolled, filed and polished. Its specific gravity is 1.74 and its specific heat 0.246. Its melting point is  $651^\circ\text{C}$ . When raised to a bright-red heat (out of contact with the air) it volatilizes, depositing upon cool surfaces again in the form of lustrous silvery crystals which belong to the hexagonal system, and are isomorphous with those of zinc; this property has been commercially used in the production of metal of high purity. It expands by 0.000026 of its own length, per Centigrade degree of rise of temperature; and at  $20^\circ\text{C}$ . its electrical resistance is 0.0481 of that of mercury.

Chemically, magnesium is a dyad. It has the symbol  $\text{Mg}$ , and an atomic weight of 24.32. Its

most important compounds are the oxide,  $\text{MgO}$ , the chloride,  $\text{MgCl}_2$ , the sulphate,  $\text{MgSO}_4$ , and the carbonate,  $\text{MgCO}_3$ . Metallic magnesium is not altered upon exposure to dry air, but ordinary air oxidizes it superficially. It dissolves readily in dilute acids, with the formation of the corresponding salts. Chlorine, bromine, iodine, fluorine, sulphur, phosphorus and arsenic combine with it directly. Red-hot metallic magnesium also slowly combines with free nitrogen to form a solid nitride. In the isolation of argon, helium and the other rare gases of the atmosphere advantage is taken of this fact for separating these gases from the nitrogen of the air. (See **ARGON**) When strongly heated in the air, metallic magnesium takes fire and burns with an exceedingly brilliant white light that is rich in chemical rays; the product of the combustion being magnesia,  $\text{MgO}$ . Advantage is taken of this property in flashlight photography. Magnesium will also burn when sufficiently heated in steam, carbon dioxide or sulphur dioxide.

Magnesium oxide, or "magnesia,"  $\text{MgO}$ , is usually prepared by heating the nitrate or carbonate of the metal; on account of this method of preparation it is commonly known as "calcined magnesia." Magnesia is a white substance, without taste or odor. It does not have a strongly alkaline reaction, but it acts as a powerful base, reacting with acids to form the magnesium salts. It is scarcely soluble in water, but it slowly absorbs moisture and carbon dioxide from the air, becoming converted into a mixture of the hydrate and carbonate. One of the most distinctive characteristics of magnesia is its infusibility, the electric furnace being required to melt it. On account of its infusibility magnesia is used in the manufacture of crucibles and of firebrick.

Magnesium chloride,  $\text{MgCl}_2$ , is prepared by dissolving magnesia in hydrochloric acid. This substance is largely used as a preventive of mildew, in the sizing of cotton cloth. The mineral carnallite contains magnesium chloride, having the composition  $\text{MgCl}_2 \cdot \text{KCl} \cdot 6\text{H}_2\text{O}$ ; the chloride is also recovered from the bitterns, or mother liquors, remaining after the crystallization of salt from brine wells in Michigan, Ohio and West Virginia, and as a byproduct in the recovery of potash from langbeinite ( $\text{K}_2\text{SO}_4 \cdot 2\text{MgSO}_4$ ) in New Mexico. Magnesium sulphate occurs native (in combination with one molecule of water) as kieserite, and it may also be prepared artificially by dissolving magnesium oxide or carbonate in dilute sulphuric acid. When combined with seven molecules of water, magnesium sulphate constitutes the familiar substance known as Epsom salts (q.v.), which is largely used in medicine. Magnesium carbonate,  $\text{MgCO}_3$ , is a white substance, insoluble in water, but soluble in a solution of ammonium chloride, and also in water that contains carbon dioxide in solution. It occurs in nature as the mineral magnesite, which crystallizes in rhombohedral forms, isomorphous with calcite. Dolomite, which occurs in nature in enormous quantities, is a carbonate of magnesium and calcium.

Magnesium salts are used to a considerable extent in medicine. The name "magnesium" is derived from "magnesia," which substance is said to have been obtained from the province of Magnesia in Thessaly.

**Metal Production.**—The expansion of the

production of magnesium metal in response to Second World War demands is one of the miracles of war production.

As an industrial metal, magnesium has been on the market for comparatively only a few years; production in the United States in 1932 was under 400 short tons, but had increased to 6,260 tons in 1940, with corresponding increases in other countries, and a world total in 1940 of about 45,000 tons. At that time these increases were considered phenomenal, but they fade into insignificance in comparison with the performance of the next three years, when mushrooming war demands brought developments in months that normally would have required years.

Nothing very specific is known of progress during this period in countries outside of the United States, but the results accomplished here may be taken as more or less representative of the progress that has been made in the other belligerent countries. However, that Germany and Japan had anticipated the coming war demand for magnesium is evidenced by the fact that the 1940 estimates attribute over half the world total to Germany, one sixth to England, somewhat less to the United States, and the remaining one sixth in decreasing amounts to Japan, France, the Soviet Union, Switzerland, and Italy. To this prewar list, Norway was added in 1941, and Canada, beginning in August 1942, the latter with an output of 3,575 tons in 1943.

While there are other uses for magnesium, air warfare claims the bulk of the output, for plane construction, incendiary bombs, illumination flares, tracer bullets, and similar items. As the field of war expanded, and the American plane construction program was enlarged accordingly, the potential demand for magnesium grew by leaps and bounds; a War Production Board estimated requirement of 550 tons a day was considered almost fantastic for a metal which only a few months earlier was being turned out at a rate of 520 tons per month, but almost before people had time to accustom themselves to the first figure, it was raised to 1,000 tons a day. Confronted with such demands, plant construction was started on an unprecedented scale, to supplement the output of the single prewar producer. This one original producer increased the capacity of its plant and built a second, while another company built a third, while the government financed and built 12 additional plants and doubled the capacity of the second private plant. By the end of 1943 these 15 plants were in production, with a rated capacity of 26,000 tons a month, with a maximum output of 21,000 tons in January 1944, practically double the output rate a year earlier.

This output was not the maximum of which the plants were capable of producing, and was only 70 per cent of the planned output, but as it turned out actual consumption failed to reach the high levels that had been anticipated, and by the end of the first quarter of 1944 sufficient surplus had been accumulated to permit a reduction of output. By June 1944 production had been scaled down by 30 per cent, with further cuts in prospect. Total production in 1943 has been reported at 184,000 short tons, with 112,700 tons in the first half of 1944.

These 15 magnesium plants use one of three basic processes for the production of the metal:

(1) Electrolysis of fused magnesium chloride,

(2) Reduction of magnesium oxide by ferrosilicon,

(3) Reduction of magnesium oxide by carbon.

The electrolytic method is preferred, especially if the required chlorides are directly available; if not, the oxide must be converted to chloride. Although the reduction procedure is simple and direct, producing fused magnesium of relatively high purity, the process has the disadvantages of requiring a cell feed of high purity, producing and handling the anhydrous chloride from the hydrated salt; providing means of handling and disposing of the chlorine produced, and providing a large amount of electric power.

The ferrosilicon reduction process is likely to prove somewhat higher in cost, but this is partly offset by the use of the oxide instead of the chloride, and is helped still more by the fact that the oxide need not be pure  $MgO$ ; a calcined dolomite, containing lime ( $CaO$ ) works better than the pure  $MgO$ . This is due to the fact that the silica ( $SiO_2$ ) produced by the reduction must be slagged off as a silicate; if pure  $MgO$  is used, from one third to one half of the  $MgO$  is lost in this way; however, if the cheaper and more plentiful dolomite is used, the  $CaO$  does the slagging work, with a corresponding saving of  $MgO$ . The calcined dolomite is ground, mixed with ground ferrosilicon, briquetted, and charged into retorts, where they are heated in a vacuum to a temperature of 1100–1200° C. The reduced magnesium is volatilized and recovered as liquid metal in condensers attached to the retorts.

In the carbon reduction a briquetted mixture of  $MgO$  and carbon is heated in an electric arc furnace. In this case both products of the reaction are gases—carbon monoxide ( $CO$ ) and magnesium vapor. If these are permitted to cool normally, the reaction reverses itself, with the reformation of  $MgO$ ; this can be partially prevented by cooling the mixture to below the reaction temperature so rapidly that the reoxidation can not be completed. This is done by sweeping the mixed gases out of the furnace with a current of hydrogen or natural gas. Even this does not prevent some reoxidation, and the magnesium vapor condenses as a fine droplet of liquid metal, the surface of each particle being covered with a layer of  $MgO$ , which prevents coalescence. To obtain a pure metal this powder is charged into a redistillation furnace, from which the metal is again volatilized and condensed as liquid metal.

A modification of the carbon reduction method uses calcium carbide as the reducing agent. It is also possible to use aluminum instead of silicon, but the cost would be prohibitive in a commercial application.

The primary raw material for the electrolytic process (magnesium chloride) may be obtained from the residual bitters from salt brine wells, from the mother liquors in the recovery of potash from langbeinite, or if necessary by chemical treatment of magnesium oxide. The oxide used in the thermic reduction processes may be supplied from mineral sources (mostly magnesite, dolomite) but at least two large plants use an elaborate process for the recovery of the 0.1 per cent of  $MgO$  in sea water and then converting it to the chloride for electrolysis, in preference to utilizing a relatively higher  $MgO$  content in mineral form. (See tables next page.)

## MAGNESIUM

TABLE I  
ESTIMATED WORLD PRODUCTION OF MAGNESIUM, 1938-42, BY COUNTRIES, IN METRIC TONS\*

Country	1938	1939	1940	1941	1942
Australia .....	..	.....	.....	200	430
Canada .....	..	.....	.....	.....	230
France .....	1,800	2,500	2,000	3,000	3,000
Germany .....	14,100	16,500	25,000	35,000	50,000
Italy .....	102	300	500	2,500	5,000
Japan .....	1,500	2,000	3,000	5,000	12,000
Norway .....	..	.....	.....	100	2,000
Switzerland .....	750	750	750	1,000	1,500
U S S R .....	500	1,000	1,500	4,000	5,000
United Kingdom .....	2,200	4,831	6,500	12,000	16,500
United States .....	2,918	3,039	5,680	14,782	44,418
Total .....	23,900	30,900	44,900	77,600	140,100

TABLE II  
ACTUAL DOMESTIC CONSUMPTION OF PRIMARY AND SECONDARY MAGNESIUM (MAGNESIUM CONTENT), 1941-42, BY USES, IN POUNDS\*

Use	1941	1942	Use	1941	1942
Structural products <sup>1</sup> .....	21,951,900	63,519,400	Chemicals .....	27,600	22,900
Aluminum alloys .....	6,762,200	14,317,200	Other .....	32,300	23,300
Other alloys .....	59,000	243,100			
Scavenger and deoxidizer .....	130,400	211,800	Total ..	29,346,600	84,525,700
Pyrotechnics .....	383,200	6,000,000			

<sup>1</sup> Castings, sheet, extruded shapes, forgings, etc.

<sup>2</sup> Includes 396,100 pounds of magnesium contained in 50-50 aluminum-magnesium alloy.

TABLE III  
SPECIFIED MAGNESIUM COMPOUNDS PRODUCED, SOLD, AND USED, BY PRODUCERS IN THE UNITED STATES, 1943-44†

Product	1943				1944			
	Produced	Sold <sup>1</sup>		Used	Produced	Sold <sup>1</sup>		Used
		Short tons	Value			Short tons	Value	
Precipitated magnesium carbonate .....	55,207	25,795	\$509,405	249,462	52,918	4,845	\$448,619	47,917
Pharmaceutical grade magnesium hydroxide .....	3,888	3,809	847,583	..... <sup>4</sup>	4,694	4,391	923,695	..... <sup>4</sup>
Magnesium chloride—100 per cent basis .....	640,708	55,740	1,931,036	587,089	525,223	19,086	712,826	509,365
Magnesium sulfate—100 per cent basis .....	26,710	26,416	1,320,104	.....	25,316	25,565	1,289,448	.....

<sup>1</sup> Sales by one producer to an affiliated consumer for immediate use are not included in "Sold" but are reported under "Used."

<sup>2</sup> Partly estimated.

<sup>3</sup> Exclusive of magnesia made from magnesium hydroxide, to avoid duplication.

<sup>4</sup> Magnesia and magnesium hydroxide used by producing firms in making other magnesias are not shown.

TABLE IV  
SECONDARY MAGNESIUM RECOVERED IN THE UNITED STATES, 1943-44, IN SHORT TONS†

Type of product or use	1943	1944
Magnesium-alloy ingot <sup>1</sup> (gross weight) .....	11,009	13,379
Magnesium-alloy castings (gross weight) .....	327	235
In aluminum alloys .....	34	23
In lead alloys .....	.....	2
In zinc alloys .....	1	5
Consumed in chemical and incendiary uses .....	33	541
Total .....	11,404	14,185
From new scrap .....	11,254	13,976
From old scrap .....	150	209

<sup>1</sup> Figures include secondary magnesium incorporated in primary magnesium ingot.

\* Minerals Yearbook, 1942.

† Mineral Industry Surveys, Bureau of Mines, Mineral Market Reports: June 21 and July 30, 1945.

**MAGNESIUM, Electric Production of.** See ELECTROCHEMICAL INDUSTRIES

**MAGNETIC DIP,** the angle formed with the horizon by a magnetic needle free to move vertically in the plane of the magnetic meridian. It is also called *inclination* and *dip of the needle*. At the magnetic equator it is  $0^\circ$ , and  $90^\circ$  at the magnetic poles. See DIPPING NEEDLE; DECLINATION NEEDLE; MAGNETISM.

**MAGNETIC FIELD.** See ELECTRICAL TERMS.

**MAGNETIC FLUX.** See ELECTRICAL TERMS

**MAGNETIC MOMENT.** See MAGNETISM

**MAGNETIC POLE,** either of two spots on the earth's surface toward which the compass needle points from any direction throughout adjacent regions. The North Magnetic Pole is at N lat  $71^\circ$ , W long  $96^\circ$ , and the South at S. lat.  $72-73^\circ$ , E long.  $156^\circ$ . See MAGNETISM.

**MAGNETIC SEGREGATION,** a process or processes in the preparation of ore by which the more valuable minerals are separated from the waste material and from each other by the use of magnets. A usual type of segregator consists of a belt conveyor carrying the ores below the magnet which raises the magnetic ore to another belt traveling at right angles to the first. As it passes out of the magnetic field the segregated ore drops into a receptacle. By weakening or strengthening the magnetic field it becomes an easy matter to separate the non-magnetic from the magnetic, and the weakly magnetic from strongly magnetic.

**MAGNETISM,** the name applied to a peculiar force action first observed in connection with certain iron ores. This ore, often called lodestone, is supposed to have been discovered in Magnesia, a part of Asia Minor. It is not possible to state just when this discovery was made, but certain passages in Lucretius show that something was known concerning it before the beginning of the Christian era. About the year 1200 we have the statement by Neckham that a lodestone free to turn takes up a definite position in space. Some further details were noted by Peregrinus (1269) and Ferrara (1629), but the greatest of the early works is that of Dr. Gilbert, a physician, who published his 'De Magnete' in 1600. Those interested in the history of the subject may consult the 'Intellectual Rise of Electricity' by Park Benjamin, in which an excellent historical sketch may be found.

The only direct evidence that a body is magnetic is its ability to exert a force on certain substances, which, by reason of their susceptibility to this action, are called magnetic substances. A lodestone brought in contact with several small bodies will select those of iron or steel, if such be present, but show no appreciable force on copper, lead, wood or in fact on any except iron, nickel, cobalt, certain rare metals and certain alloys, discovered by Hensler, of relatively non-magnetic metals, and a few others to a lesser degree. Of even greater interest and importance is the fact that the lodestone is able to endow steel or iron with the ability to exert this force. Soft iron loses its

external magnetic qualities when removed from the immediate neighborhood of the exciting source, but hard steel or iron will retain this property for a long time. If a bar or rod of hard steel is drawn across a piece of lodestone or other permanent magnet and is then suspended so as to be free to turn about a vertical axis it will take up a definite position, usually its line of greatest length will be approximately north and south. If it be plunged into a box of iron filings, little magnetic action will be manifest near the middle of the bar, but near the ends considerable quantities of filings will be attracted and may be lifted against the action of gravity. These facts led to the naming of the regions of greatest external action the poles of the magnet and since the lines joining these regions would, in the case of a freely suspended magnet, lie in many places nearly north and south, the pole which seeks the north is often called the north-seeking or positive pole, the other which turns toward the south is correspondingly named the south-seeking or negative pole. The entire subject was formerly studied with reference to the behavior of like and unlike poles, and it was even supposed that these poles consisted of opposite sorts of magnetic matter. Later investigations have developed methods less directly dependent upon the idea of poles, which are preferable for many purposes.

If we suppose two long magnets placed as shown in Fig 1 a study of their mutual force

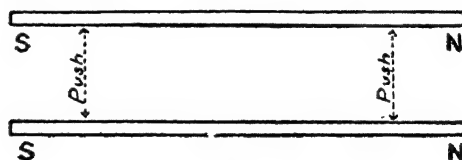


FIG 1

action would indicate that each is exerting a push tending to increase the distance between them, and that the amount of this repulsion will vary with the distance between the magnets. If one of the bars be replaced by another whose magnetic quality is different the force action will be modified. If one of the magnets be reversed in position a corresponding force tending to reduce the distance between the bars would be observed. It is convenient to use as a preliminary definition the statement that a unit pole is one which would exert unit force upon a precisely equal pole at a distance of one centimeter. The law of pole action can then be stated by saying that the force is equal to the product of the two poles strengths divided by the square of the distance between the poles.

If a freely suspended magnet is brought into

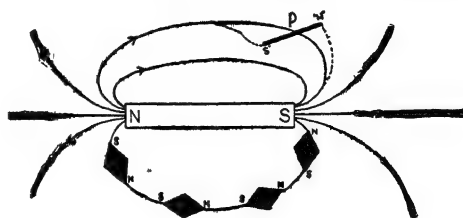


FIG 2

the neighborhood of a large bar magnet as indicated in Fig. 2 it will be observed to take up a position somewhat as indicated in the lower



part of this diagram, as its point of suspension is moved along the line. The region where this directive force is noticeable is called the *field* of the magnet (Gilbert's "orb of virtue"). If continuous lines are drawn, which at each point have the direction taken by the free magnet, these lines are called lines of magnetic force, and they offer a very convenient method for a general study of magnetic action. While these lines have no objective existence, it is, nevertheless, desirable to imagine that they are real and that they possess certain definite qualities. They should always be considered as being directed away from the north-seeking or positive pole. In the early conception of magnetic action these lines would have been regarded as the lines of flow of the magnetic material, and the word flux, still in use, bears evidence of this conception. It is convenient also to regard the lines of force as being under tension and capable of repelling each other. The number of actual lines of force which could be drawn about a magnet is infinite. For purposes of comparison, however, it is customary to represent the force action at a point upon the unit pole placed at that point by the number of lines drawn per square centimeter on a surface perpendicular to the field. A unit field is one in which a force action upon a unit pole is one dyne, about the weight of 1-1000 of a gramme.

In order to compare magnets and to facilitate magnetic computations, certain methods of measurement have been devised. Only a brief sketch can be given here, as full details of these operations may be found in books devoted to this subject, some of which will be mentioned at the end of this article. When a bar magnet is placed at right angles to the lines of a uniform magnetic field it will experience a twist tending to place it along these lines. The amount of this twist will depend upon three things. First: The pole strength of the magnet in question. Second: The distance between the poles. Third: The strength of the field where it is placed. The product of the pole strength by distance between poles is called the magnetic moment of the magnet. When a magnet is suspended freely and slightly displaced from a position parallel to the lines of force it will vibrate about this position. The time required for a complete swing is found to depend upon the magnetic moment, the moment of inertia and the strength of the field where the magnet is placed. The vibration period may be directly observed and the moment of inertia computed from the dimensions and weight of the magnet. In this way the product of the magnetic moment by the field strength may be found. If the same magnet is held with the line joining its poles east and west it will cause a small freely suspended magnet some distance to the east or west to turn slightly from its equilibrium position. The amount of this deflection depends on the distance between the magnets and the ratio of *magnetic moment to field strength*. If we denote the magnetic moment by  $ml$  and the field strength by  $H$ , the product of  $ml$  times  $H$  is found from the time of vibration, and by means of the deflection of the small auxiliary

magnet  $\frac{ml}{H}$  may be determined. When  $ml$  times  $H$  or  $ml$  divided by  $H$  is known either  $ml$  or  $H$  is readily computed. When the field at any point is known, a comparison of the time of

vibration of a magnet at the known point with its period when vibrating at any other point enables us to compare the two fields without further measurement. The law of change being that if periodic time is doubled the field strength would be four times as great, or the period varies inversely as the square root of the field in which the magnet vibrates.

The facts mentioned above regarding the ability of a magnet to cause pieces of neutral iron or steel to show magnetic properties is frequently spoken of as magnetic induction. The general phenomena can be readily remembered if we imagine that it is easier for lines of magnetic force to pass through iron than through air. Small pieces, as shown at P, Fig. 2, would have lines entering at "S" and leaving at "N" and would behave as small magnets placed in corresponding positions. Owing to the tension of the lines of force these small pieces would tend to set themselves nearly parallel to the undisturbed direction of the lines. If a sheet of glass or other non-magnetic material is placed over a magnet and iron filings are sprinkled on its surface, a slight tapping, sufficient to overcome friction, will enable the lines of force to arrange the small temporary magnets parallel to the field. In this way maps of magnetic fields may be readily found, and their study throws considerable light upon many de-

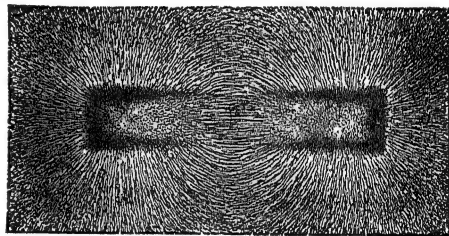


FIG. 3.

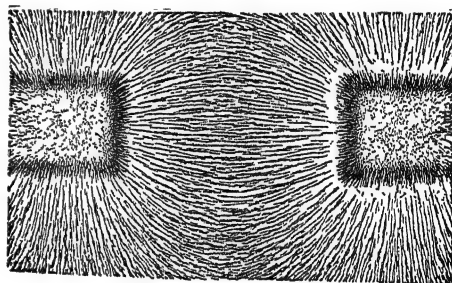


FIG. 4

tails of these peculiar phenomena. Such fields are shown in Figs. 3 and 4. If a sphere of iron or cobalt is free to move in a magnetic field which is not uniform, a tendency is always observed for the iron to place itself in the strongest part of the field, or so that as many of the magnetic lines pass through it as possible. Such a substance is called paramagnetic. Some substances, as for example a sphere of bismuth, will tend to move to the weaker portions of the field, indicating that it is more difficult for magnetic lines to pass through the material than through air. These are called diamagnetic bodies.

The importance of magnetic action in both theoretical and practical affairs is due largely

to its intimate connection with the phenomena of the electric current. In fact it is absolutely impossible under any conditions to have an electric current flow in a conductor without producing a magnetic field. In the case of a long straight wire carrying current the magnetic lines are circular in form, concentric with the wire, and their planes are perpendicular to its axis. If a wire is wound in a long, straight, cylindrical coil, frequently called a solenoid, and a current be passed through it, the field produced will be nearly identical with that of a bar magnet, the difference being that the lines of force are entirely in air and are not modified by the peculiar properties of iron. By increasing the strength of the current and the number of turns of wire, a comparatively strong magnetic field may be produced at the centre. A piece of soft iron or steel inserted in the coil becomes a powerful temporary magnet, while strips or bars of hardened iron or steel would in the same way become permanent magnets. The requirements of modern electrical processes have led to very careful investigations of the magnetic behavior of iron in connection with the production and the measurement of electric energy. Only a brief sketch of the fundamental features can be given here. If we suppose an electric current flowing in a long solenoid, which does not contain an iron core, the strength of the magnetic field through the inside of the solenoid may be readily computed from a knowledge of the number of turns of wire and the strength of the current. The symbol  $H$  is generally used to indicate the field strength when iron is absent. If now a bar of iron be inserted it will be found that the magnetic field is greatly increased. The new field will depend partly on the original value of  $H$  and partly on the quality and previous magnetic history of the iron inserted. The symbol  $B$  is generally used to denote the intensity of the field when iron is present. It may then be stated that  $B$  equals  $\mu H$ , where  $\mu$  is a variable factor depending on the nature of the iron and the field strength; this factor is called the *permeability*. The original field  $H$  is frequently spoken of as the magnetizing field and the new one as the induction. Or  $H$  stands for the number of lines per square centimeter where iron is absent and  $B$  stands for the number of lines per square centimeter in the iron. If iron, in a neutral magnetic condition, is placed in a solenoid and the electric current is gradually increased from zero the iron will be subjected to a steadily increasing magnetizing field. A comparison of corresponding values of  $B$  and  $H$  in such a case leads to very important results. The relation between these values is best explained by reference to a curve drawn by using these quantities as co-ordinates. Such curves, usually called the curves of magnetization, are shown in Fig. 5. It should be observed that when  $H$  is almost zero, the induction is very small, then  $B$  increases more and more rapidly with a rising field until at point two the rate of increase of  $B$  with  $H$  begins to fall off rapidly, and shortly a value of  $B$  is reached which cannot be materially increased no matter how strong a magnetizing field is used. For example in the specimens shown it is useless to extend the value of  $H$  much above 70, and in actual practice this limit would be taken much lower. When as many lines as possible are car-

ried through the iron it is said to be saturated. The exact shape of the magnetization curve will depend upon the nature and previous magnetic history of the specimen, but the ratio  $B/H$  at any point gives the ability of the iron to multiply magnetic field strength for that particular

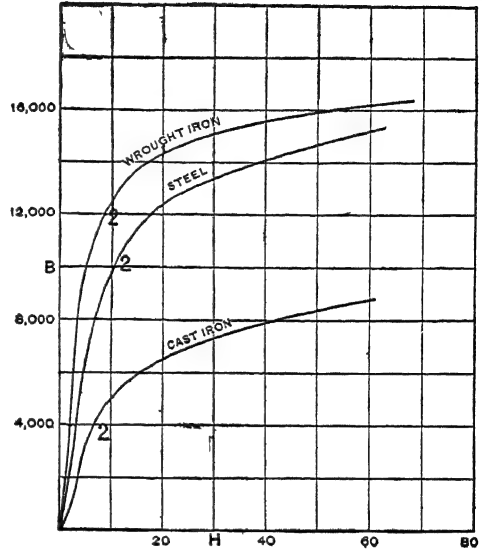


FIG. 5

field. If, however, any definite state of magnetization is attained as at the point M, Fig. 6, it will be found that upon reducing the field,  $H$ , the values of the induction,  $B$ , will not agree with those found for the same value of  $H$  when the field was increasing. In fact if  $H$  be changed to zero and then to negative values and back again to the former condition the value of  $B$  will form a loop as indicated. This peculiar lag of the induction when the field is

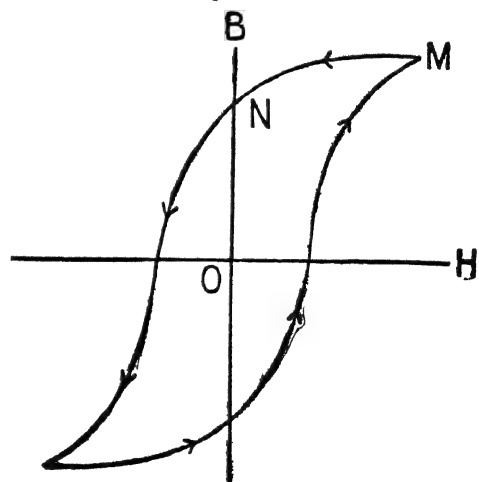


FIG. 6.

reduced is called hysteresis, and the hysteresis loop as shown is of practical importance because its area enables one to find the work converted into heat when the magnetization is carried through one complete cycle. The line ON measured the residual magnetism, which is

semi-permanent, and will be greater in hard than in soft iron or steel. No matter where the process of magnetization is stopped a series of cyclic changes of the magnetic field always gives corresponding loops.

A theory due to Weber and later improved by Maxwell which is useful in the correlation of the various phenomena observed in the magnetic behavior of iron is at once suggested by a simple experiment. Take a magnetic steel needle and which shows distinct polarity. Upon being broken into two parts it will be found that instead of securing two isolated poles, that each piece possesses a plus and a minus pole practically identical with the poles of the original needle. Carry this process to any length and each little piece, however small, will be found to possess two poles, one positive and the other negative. If we assume that this process could be carried on to the smallest conceivable particle of the iron we should say that each molecule of the iron is by itself a magnet. We may further suppose that the molecular magnets in a neutral piece of iron are entirely devoid of regular arrangement as regards position of the poles; such a chaotic condition may be indicated roughly by Fig. 7. It may be supposed that these molecular

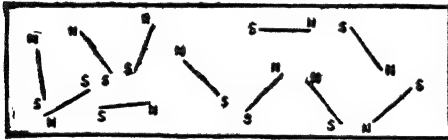


FIG. 7.

magnets are partly held in position by the action of forces analogous to friction, which also tend to hold them in any new position to a greater or less extent in case the original arrangement is disturbed. Under the action of a weak magnetic field these friction forces would prevent the turning of the molecular magnets into parallelism with the field lines. As soon as the field is strong enough to overcome this sort of friction we might expect the same tendency to arrangement of these minute magnets that is observed in the case of iron filings in the mapping of magnetic fields. As long as a considerable number of the axes of these molecular magnets make fairly large angles with the field lines the leverage by which turning is produced would be considerable; if however they approach parallelism with each other and the field lines, the effective twisting would be very materially reduced. This would correspond to the approximate saturation of the iron and no considerable change in position could be produced by increasing the field strength. The general arrangement may be indicated approximately in Fig. 8, where

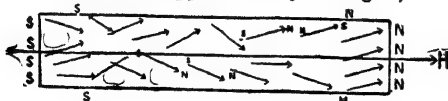


FIG. 8.

it will be observed that there is a tendency for free positive poles to appear at one end, namely, where the field lines leave the iron, and for uncompensated negative poles to appear at the other end.

The facts in favor of this sort of explanation may perhaps be briefly summarized as follows: (1) the general shape of the mag-

netic curve is explained. (2) As friction or other molecular forces tend to prevent a return to the original chaotic condition after magnetization this arrangement would in part persist after removal from the field, or permanent magnetism would be explained. (3) Soft iron should be easier to magnetize and less permanent than hardened iron or steel. (4) Jarring as by blows tends to reduce friction and to assist in the process of magnetization and also to reduce permanent magnetism. (5) High molecular activity consequent on rise of temperature decreases magnetic action, in fact, at a dull red heat iron is non-magnetic. (6) Rapid reversals of magnetism involve work against molecular forces and the production of heat, this heat is proportional to the area of the loop. (7) A tube of iron filings or a set of pivoted magnets shows the same behavior in a rising or falling magnetic field as a solid bar. The precise agreement between experimental facts and the indications from theory shown above makes this conception extremely useful. Just why molecules of iron should be permanently endowed with magnetic properties is a subject for speculation which has been indulged in by numerous prominent scientists. It has been supposed for example that electrical currents flow around these molecules, that they consist of vortex rings or that small electrically charged parts are in vibration in such a way as to produce the phenomena of permanent molecular magnetism. The general usefulness of the hypothesis is in no way connected with the truth or falsity of such speculations any more than the facts regarding free fall are dependent on our view of gravitation.

The general statements noted above regarding magnetism of iron are of importance in the manufacture and utilization of magnets for various purposes. Where a considerable amount of permanent magnetism is undesirable, soft iron or steel is always used. For the manufacture of permanent magnets special steel is selected and hardened and is then magnetized by its insertion into a solenoid carrying a powerful electric current. Severe shocks or blows are frequently given in order to assist in the molecular rearrangement. The interaction of all the elementary magnets together with temperature changes and mechanical shocks will tend to weaken a magnet. This loss is very considerable at first but finally an almost permanent state is reached. When used in electrical measuring instruments magnets are artificially aged by subjecting them to considerable changes of temperature and a series of mechanical shocks. It should be noted in this connection that the permanence of the magnet will be somewhat increased by joining its poles, when not in use, by a piece of soft iron. The induced magnetism at the ends of the iron helps to hold the poles of the small molecular magnets in position, and counteracts the tendency of these poles to demagnetize the bar.

Aside from the extended use of permanent magnets in electrical instruments their practicable application is comparatively limited. The electro-magnet is widely used where it is desired to cause a temporary force action at a distance from the operator, as for example in the telegraph, etc. Powerful electro-magnets are now frequently used to lift large masses of iron during manufacturing processes. It may

be noted in this connection that the lifting force of a magnetic piece of iron depends on the square of the number of lines per unit area at the contact face. Only so large an area should be used in contact as can be very highly magnetized by the current available. In the construction of dynamos, motors and transformers, the magnetic quality of the iron used is of great importance. The total number of lines set up (flux) must be sufficient for the operations involved and saturation should not be approached in any part. Where the cross section may be made large, cast iron can be used, but where the flux must be concentrated, special soft iron or steel is required. All air gaps are made as small as mechanical and electrical considerations of construction will permit, in order that the required flux may be more easily set up

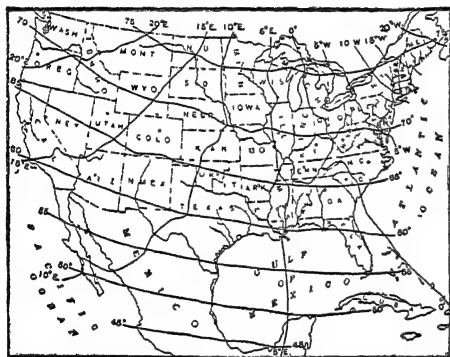


FIG 9

by the electro-magnets. Or as electrical engineers say, the magnetic "reluctance" is made small by use of properly proportioned iron parts and small air gaps in order that the *magnetomotive force* required may not be excessive.

**Terrestrial Magnetism.**—The statement usually made that a freely suspended magnet needle, remote from magnetic masses, tends to point north and south is not correct except for a few localities at certain times. The actual nature of the earth's magnetic field must be found by extended experiments which are being carried on by numerous observers largely under the direction of various governments (See methods of magnetic measurements above). If a steel needle be suspended by a silk fibre and carefully balanced so as to hang horizontal and is then magnetized it will be observed to finally come to rest in a certain vertical plane and to be inclined to the horizontal. The angle between a horizontal line and the direction of the needle is called the dip, and the angle between the true north and south plane and that in which the needle lies is called the declination. The values of the dip, declination and intensity of the earth's field at a point are called the magnetic elements at that point. The use of the compass both by the surveyor and mariner over nearly the entire surface of the earth makes an accurate knowledge of these elements indispensable. In order to convey this information, in a practical way, recourse is had to maps on which places having the same declination, for example, are joined by lines. Such maps bring into view many interesting features as regards the earth's magnetism. For example, Fig. 9,

published by the United States Coast and Geodetic Survey for 1900 shows that in northern Oregon, Idaho and Montana the compass pointed approximately 20 degrees east, while in the extreme northeastern part of Maine it pointed about 20 degrees west. Along an irregular line crossing Michigan, Ohio, North and South Carolina and passing east of Cuba the declination was 0, or the needle pointed due north. It is evident from an inspection of these maps that the poles of the earth considered as a magnet do not coincide with the geographic poles. The line of no dip follows the equator only approximately. North of this line the north end dips down, while at the south it is reversed. Some of the minor variations are no doubt caused by local causes, such as masses of magnetic material, but it is a general belief among observers that the earth's magnetism is largely due to outside agencies. Another very important point for the mariner, who depends on the compass to find his way in safety across trackless seas or the surveyor anxious to locate landmarks, is that these magnetic elements are continually changing even during the day, as well as month by month and year by year. In London during 232 years the declination changed 35 degrees. "A street one mile long laid out in London parallel to the compass direction in 1580 would have its terminus seven-tenths of a mile too far east according to the compass in 1812." Since 1812 the declination at London has changed from about 24 degrees west to 16 degrees west. In 1580 it was 11 degrees east. In fact it would seem that the magnetic poles of the earth are slowly vibrating. The periods of some of the components of this vibration are astronomical in origin—the day, the year, the lunar month, the sun-spot period, etc. The variation during the day must be taken into account in accurate work as a mile run in the morning and repeated in the afternoon may vary by 5 to 20 feet at its terminus. Sudden changes called magnetic storms also frequently occur, which seem to be associated with atmospheric electrical conditions, sun spots, etc. In order to secure data for the study of these complex phenomena, magnetic observatories are maintained where delicate instruments record, day and night, the countless fluctuations of the magnetic forces.

The problem of the navigator is still further complicated by the use of iron ships which are always sources of disturbance, both because of their permanent as well as their variable magnetism. The continual jarring and changes of temperature during a voyage enables the earth's field to continually change the distribution of magnetism in the vessel. The means to be used for the correction of this deviation have received the attention of many skilful investigators. The limits of this article will hardly allow a discussion of the matter which may be found in special books noted at the end.

The contrast between the state of knowledge regarding magnetism before 1600 and its present development is one of the most striking indications of the growth of scientific investigation. Instead of vague speculations, partial truths veiled in mysticism, more or less direct references to dogma and the supernatural, we have organized knowledge based on experience and constantly checked by experiment and ap-

plication. The number of those who believe in "magnetic" healing or, that, because an iron pipe driven in the earth shows polarity, the water flowing through it is magnetic and has special medicinal virtues, is constantly on the decrease. The relations between magnetism and other fields of physical research cannot be treated in this article, yet it may be well to mention that such relations are constantly being investigated and no one in touch with present developments believes that the end is at hand. And it may well be that the delicately poised magnetic needle in some future interpretation of its countless movements will give us a knowledge of the invisible yet all-pervading agency which governs its fluctuations and lead us to a broader generalization of physical phenomena than we can formulate at present. (See ELECTRICITY, ELECTRO-MAGNETISM, etc.). For the optical effects of magnets in rotating the plane of polarization of light see LIGHT, POLARIZATION.

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**MAGNETISM, Animal.** See HYPNOTISM.

**MAGNETITE, or MAGNETIC IRON ORE,** native magnetic oxide of iron,  $\text{Fe}_3\text{O}_4$ . It sometimes has part of its iron replaced by titanium or magnesium, and occasionally by nickel. It is very abundant (the production of the United States in 1929 being 2,401,104 long tons, or about 3 per cent of the iron ore production of the country). When pure it constitutes a valuable ore of iron, 72 per cent of its weight consisting of that metal. Magnetite crystallizes in the isometric system, commonly in octahedra, but also in dodecahedra, with striated faces. It also occurs, and very generally, in massive and granular forms. It is black in color, with a metallic or submetallic lustre. It is brittle, and has a hardness of from 5.5 to 6.5; the crystals having a specific gravity of about 5.17. It may be readily distinguished by the fact that it is strongly magnetic. Specimens are found which manifest quite a strong, permanent magnetic polarity, this variety of the mineral being known as "lodestone." Magnetite occurs in vast beds in Canada and in the northern and eastern parts of the United States. Abundant deposits of it are also known in California and Washington. It is a common result of segregation in magmas during cooling. See IRON ORES; MAGNETIC SEGREGATION.

**MAGNETO**, a device, consisting essentially of a magnet and interrupter, for sending sparks into the ignition system of an automobile. The Eisemann, Bosch and Splitdorf are well-known types. See AUTOMOBILE.

**MAGNETO-ELECTRIC MACHINES.** See ELECTROTHERAPEUTICS.

**MAGNETO-ELECTRICITY.** See ELECTRO-MAGNETISM.

**MAGNETOMETER**, in its customarily restricted sense, an instrument employed in observatories to determine the intensity of terrestrial magnetism. Essentially the instrument consists of a magnetic needle free to swing in a horizontal plane within a circular scale. The magnet may be supported on a fine vertical pivot, or by suspension on a fine untwisted silk thread. Bifilar suspension is more to be depended upon; the magnet is supported by two parallel threads and screws enable the tensions in the threads to be equalized and their distance asunder to be adjusted. For delicate readings the instrument has been highly refined, a mirror being attached to the magnet, reflecting a beam of light upon a scale. To prevent possible oscillations due to air currents the magnet is enclosed within a box with glass sides, through which it may be observed. A tall tube above the box encloses the suspending thread. The unifilar magnetometer is set up with its magnet lying in the direction of the magnetic meridian. The bifilar instrument is set with the magnet at right angles to that meridian—a much more sensitive position. To fill the needs of traveling observers, portable magnetometers have been devised. These are more comprehensive, comprising within a single unit an astronomical telescope with a magnetometer—for the determination of both the magnetic declination and the horizontal intensity; and also a dip circle for the determination of inclination and total intensity. Consult *Terrestrial Magnetism*, Vol. XVI, page 1, 'Two New Types of Magnetometers'; and Vol. XVIII, page 105, 'Description of the CIW (Carnegie Institution, Washington) Combined Magnetometer and Earth Inductor' (September 1913). See MAGNETISM—*Terrestrial*.

**MAGNIFICAT.** The words which Mary pronounced when she visited Elizabeth (Luke i, 46-55) begin, *Magnificat anima mea dominum* ("My soul doth magnify the Lord"). Hence the whole of her thanksgiving on this occasion has been called the Magnificat. The present usage of the Roman Catholic Church is to chant or pronounce the Magnificat every day at vespers.

**MAGNOLIA**, Ark., town and Columbia County seat, alt. 312 feet; on the Louisiana and North West Railroad; 50m. SE. of Texarkana; in a farming, lumbering and oil and gas region. Cotton ginning, cotton textiles, cottonseed oil, gasoline refining, and the manufacture of lumber, chairs, mattresses, foundry products and soft drinks are the main industries. Agricultural and Mechanical College (a junior college, opened in 1912) is located here. Settled in the 1840's, it became a town in 1853. Pop. (1930) 3,008; (1940) 4,326.

**MAGNOLIA**, a genus of ornamental, deciduous or evergreen trees and shrubs of the family *Magnoliaceæ*. The 35 species are natives



mostly of the United States, India, China and Japan. They are characterized by large, alternate entire leaves, large white, purple or pink, sometimes yellowish, solitary, terminal flowers, which are often highly fragrant; and cone-shaped, often red, decorative fruits. They are widely planted for ornament in parks and gardens; most of the deciduous species being tolerably hardy as far north as Massachusetts, some even farther north, but the evergreen kinds tender even at Washington, where, however, one species (*M. grandiflora*) can withstand the winters if in protected situations. The wood is close-grained, generally soft, spongy, light and satiny. It is little used because it is not durable, but in Japan one species (*M. hypoleuca*) is used for lacquering. The bark and the fruits of a few species were formerly employed as stimulants and tonics, but have fallen into disuse.

As a rule, magnolias thrive best in rather rich, fairly open, moist, peaty or sandy loams, but generally prove satisfactory upon any garden soil. A few, especially the beaver tree (*M. glauca*), which is also popularly known as sweet, swamp or white bay, are natives of very wet grounds and must be naturally well supplied with water, when planted for ornament. They may be propagated by means of layers, by grafts or by seeds planted as soon as ripe or stratified in sand and kept out of doors where they cannot become dry. The plants should be transplanted when the new growth is commencing, otherwise the operation is frequently unsuccessful.

The following species are among the most generally planted in the United States. The bull bay or big laurel (*M. grandiflora*) is found naturally from North Carolina to the Gulf States. It is a pyramidal, evergreen tree which often attains heights of 75 feet or more, and is especially conspicuous when in blossom, its fragrant white flowers often attaining a diameter of a foot. The swamp sassafras or sweet bay (*M. glauca*) ranges from the coast region of Massachusetts to Florida and irregularly southward to Texas. It reaches a height of 20 feet and bears fragrant cream-colored flowers. The cucumber trees (q.v.) are natives of the southeastern United States and are particularly attractive because of their pink fruits. Of the exotic species the yulan (*M. denudata*), a native of China, where it has been cultivated for more than a thousand years, and *M. coco*, *M. liliiflora* and *M. hypoleuca* are popular, the first and last particularly. By crossing, hybridizing and selection a large number of choice horticultural varieties have been produced.

**MAGOFFIN**, mā-gōf'in, Beriah, American statesman b Harrodsburg, Ky., 18 April 1815; d. there, 28 Feb 1885. He was graduated from Centre College (Danville, Ky.), in 1835, from the law school of Transylvania University (Lexington, Ky.) in 1838, entered the practice of law at Jackson, Miss., in 1839, but in the same year returned to Harrodsburg. In 1840 he became police judge, in 1848, 1856 and 1860 was a delegate to the Democratic national conventions, in 1850 was elected to the State senate of Kentucky and in 1859-62 was governor of Kentucky. He refused, 15 April 1861, to comply with Lincoln's call for 75,000 troops; in May 1861 by proclamation warned both the Confederate and Federal governments against oc-

cupying Kentucky soil, and the citizens of the State against entering hostilities; and in August requested Lincoln to withdraw United States troops. He vetoed a resolution of the legislature directing him to proclaim the evacuation of Kentucky by the Confederates; but the resolution was passed over his veto. In August 1862 he resigned his office and in 1867 was elected to the lower house of the State legislature.

**MAGOG**, mā'gōg, Canada, town in Stanstead County in the province of Quebec, on Lake Memphremagog at its outlet, and on the Canadian Pacific Railroad, about 19 miles southwest of Sherbrooke. It has regular daily communications with Newport and other places in Vermont. Its industries include textile prints, lumber and butter and cheese making. Magog is a favorite resort for anglers. Pop. (1931) 6,302.

**MAGOG**. See GOG AND MAGOG.

**MAGOON**, mā-noon, Charles E., American lawyer and administrator; b. Steele County, Minn., 5 Dec. 1861; d. Washington, D. C., 14 Jan. 1920. He was educated at the University of Nebraska, was admitted to the bar in 1882 and engaged in the practice of law at Lincoln, Neb., in 1882-99. He was appointed judge-advocate of the Nebraska National Guard, with rank of major, and in 1899-1904 he was law officer of the Bureau of Insular Affairs at the War Office. He served as general counsel for the Isthmian Canal Commission in 1904-05, and was a member of the commission in 1905-06. He was governor of the Canal Zone from 25 May 1905 until 12 Oct. 1906. He was also Envoy Extraordinary and Minister Plenipotentiary to Panama from 7 July 1905 until 12 Oct. 1906. He acted as provisional governor of Cuba from 12 Oct. 1906 until 28 Jan. 1909. Author of 'The Law of Civil Government Under Military Occupation' (1902).

**MAGOT**. See BARBARY APE; MACAQUE.

**MAGPIE** (originally *pie*, the pied or variegated bird, a bird of the genus *Pica*, closely related to the jays. The genus is distinguished by the extremely long wedge-shaped tail, the middle feathers of which equal the entire length of the head and body, while the outer feathers are less than half as long. The notorious magpie of Europe (*P. rustica*) is represented in North America by the variety *hudsonia*, which is rather larger but otherwise similar. The color is a lustrous black with a varied and changing iridescence and sharply contrasting white under parts and patches on the shoulders and wings, the latter being conspicuous as the bird flies. The yellow-billed magpie (*P. nuttalli*) of California is precisely similar except that the bill and a naked area at its base are yellow instead of black. Other species inhabit Asia and Africa. In America the common magpie is confined to the west, its range reaching from Alaska to Arizona and from the plains to the Cascade Mountains, being especially common in the Rocky Mountains. The magpie is a handsome bird of saucy, vivacious habits and is chiefly noted for its thieving habits and general rascality. It is always engaged in mischief, either in stealing brightly colored or glittering objects from the habitations of man or in robbing the nests of other birds, but because of its pert, merry manner is

usually forgiven for the former class of offenses. The caged birds seen in the East give but a faint idea of the beauty and activity of these birds in the wild state. Like the jays the magpies are omnivorous, but less strictly arboreal than the jays. The nest, which is built in a tree or bush, is very ingeniously and substantially constructed. It is a large domed structure protected outwardly by a thick, bristling layer of thorns and twigs, through which a narrow passage opening on one side leads to a deep cup plastered with mud and lined with fibres. Six to nine greenish drab eggs, much spotted and dashed with various shades of brown, are laid. The American magpie is occasionally taken young and made a pet, but it has not the reputation for talking and amusing, albeit thievish, manners, which has made the European bird a favorite from ancient times. Descriptions of its many interesting habits will be found in the books of Coues, Ridgway, Merriam, Cooper, Keyser and other writers upon the ornithology of the western United States.

**MAGRATH, ma-grāth, Andrew Gordon**, American Confederate governor. b. Charleston, S. C.; d. there, 9 April 1893. Magrath was the son of an Irish revolutionist of 1798 who escaped to South Carolina. He was educated at South Carolina College (1831) and at the Harvard Law School. He served two terms in the State legislature (1840-44), practised law in Charleston and in 1856 was made Federal district judge by President Pierce. In 1861 he resigned, was elected to the South Carolina convention which adopted the ordinance of secession and was then appointed Confederate judge. In December 1864 he became governor of South Carolina. After the war he was imprisoned for several months. He later resumed the practice of law in Charleston.

**MAGRATH, William**, American painter: b. Cork, Ireland, 20 March 1838. He emigrated to the United States in 1855, and was elected National Academician in 1876. He produced many excellent landscapes and his genre pictures are full of character. Among them may be mentioned 'The Road to Kenmare' (1871), 'The Reveillé' (1873); 'Rustic Courtship' (1877); 'On the Old Sod' (1879), which last is in the New York Metropolitan Museum; 'Paddy on his own Land' (1900); 'Sheep Pasture' (1903); 'The Killarney Country' (1910); 'The Bog of Allen, Ireland' (1911); 'Bog Lands' (1913). Deceased.

**MAGRUDER, ma-groo'dér, John Bankhead**, American soldier: b. Winchester, Va., 15 Aug. 1810; d. Houston, Tex., 19 Feb. 1871. He was graduated at West Point in 1830, served for a short time in the 7th Infantry, then in the artillery. In 1836 he was made first lieutenant, saw service in the Seminole War 1837-38 and became captain in 1846. He took an active part in the Mexican War, rising to the rank of lieutenant-colonel, 1847. In 1861, while in garrison at Washington, D. C., he resigned from the United States army, accepted a Confederate colonelcy and commanded the artillery at Richmond. In the same year he won the battle of Big Bethel (q.v.), and was made brigadier-general and major-general. Assigned to the Yorktown district, he fortified the Peninsula and with a force of 12,000 held it against the Army of the Poto-

mac in April 1862. In the Seven Days' Battles (q.v.) he commanded the Confederate left. In October 1862 he was appointed commander of the Department of Texas. He recaptured Galveston 1 Jan. 1863, and broke the blockade of that port. After the war he served as major-general in the army of Maximilian in Mexico until the end of the empire, but finally in 1869 he settled at Houston for the rest of his life.

**MAGRUDER, Julia**, American novelist: b. Charlottesville, Va., 14 Sept. 1854; d. Richmond, Va., 9 June 1907. Her literary career began in 1885 with 'Across the Chasm,' published anonymously. She wrote 'A Magnificent Plebeian'; 'The Violet'; 'Miss Ayr of Virginia'; 'A Manifest Destiny'; 'Princess Sonia' (1895), etc.

**MAGUAGA, Battle of.** See DETROIT, SIEGE AND CAPTURE OF.

**MAGUINDANAO, mā-gēn-dā'now**, a tribe of Moros who inhabit the valley of the Rio Palangui, island of Mindanao; the Moros of the Sarangani Islands, and some of those of Davao Bay belong also to this group. See PHILIPPINE ISLANDS.

**MAGYAR MUSIC.** See HUNGARY, *Music*.

**MAGYARS, mō'gyōrz**, the original name of the Hungarians, which they still use in preference to any other. See HUNGARY.

**MAHA-KAŚYAPA, mā hā' kāsh'yā pā**, Kassappa, one of Buddha's first converts and one of his 80 great disciples who was favored by Buddha as his successor. After the death of Buddha he seems to have taken an active part in the work of organizing and propagating the faith. It was at his instance that the first Buddhist council of a general nature assembled. He gave considerable attention, according to tradition, to the organization and arrangement of the canonical books of the Buddhist faith. Playing such a prominent part at the dawn of the Buddhist religion, and being the beloved and trusted disciple of the master and, in a sense, his successor, it is natural that he should enter largely into the legendary and traditional religious lore of the Buddhists, as he does, in fact. Consult Bournouf, 'Introduction à l'histoire du buddhisme indien' (Paris 1844); 'Le lotus de la bonne loi' (Paris 1852); Kern, 'Manual of Hindu Buddhism' (Strassburg 1896); Rhys, Davids, 'Buddhism' (London 1890).

**MAHĀBHĀRATA.** The name of this, the great national epic of the Hindūs, etymologically considered, consists of the word "mahā," meaning "great," "mighty," and "bhārata," one of the several names of a powerful Indian tribe, but has reference more to the story itself, about "the great tale of the Bhāratas." In the shape in which the Mahābhārata has come down to us it is enormous in bulk, comprising some 100,000 *śloka* (couplets), and as its author is cited one Vyāsa. But the word "vyāsa" stands for "reviser," "collector," "editor," and this alone, irrespective of the fact that no description, no biographical detail of this Vyāsa has existed, seems clearly to prove that the Mahābhārata represents a gradual growth and gathering of poetic material finally given a collective name and figuring as an entity. In the poem itself the number of *ślokas* (distichs) is given at 24,000, while there is

# MAGPIE



Courtesy: Bird-Lore Magazine

1 and 2 Magpie

3 Yellow-billed magpie

(Nearly one third natural size)



rather strong literary proof that the original core was even much smaller than that, namely, counting but 7,000 *śloka*s. The total of the colossal remainder represents accretions and superimpositions that were at last included in the whole — many episodes, much legendary lore, lengthy and detailed ethical precepts, such as those addressed to the Kshatriyas, the warrior caste, to guide their behavior to the other castes, and other material. Already in the 4th century A.D. the 'Mahābhārata' was popularly held in the light of a code of laws as well; it was not alone the 'Iliad' and 'Odyssey' of the Hindū people combined, which youth studied and recited and learned by heart, but also a compendium of morals read aloud by the priests in the temples and shrines, at least fragments and selections from it. Thus we do know that the 'Mahābhārata' is a work of great antiquity; but the exact period of its birth, the whole story of its genesis, we cannot even guess. It is certain, however, that the kernel of the epic, describing the war between the Kurūs (or Bhāratas) and the Pāṇḍavas, must have antedated the time of Kalidāsa by many centuries. The archaic language shows that. This simple tale gives us as heroes Duryōdhana, son of blind King Dhritarāshtra, Drōṇa, Kama, Çalya among the Kurūs, and among the Pāṇḍavas the five sons of Pāṇḍu, Arjuna, Yudishthira, Bhima, and the Vishnuic incarnation, their wise counselor, Krishna, the ruler of Yādava, the "spinner of all ruses and deceptions." The circumstance that the five Pāṇḍava brothers have jointly but one wife, Drāupadi, and the fact that the caste, marriage and inheritance customs, as exemplified in the poem, are in strong contrast with later practices, of itself bespeaks great antiquity of this, the core of the epic. Brahmanism had not yet crystallized when it originated. At very different periods extraneous matter has been interpolated and amalgamated with this primary portion of the Mahābhārata. In fact, all that ran riot in the earlier Hindū mind in the shape of folklore, legend and myth was, one after the other, added to the first text and gradually coalesced with it. Hence, too, the enormous size of this lay as we have it now. But even as it is, the Mahābhārata is by no means a unit accepted by all. We see it subdivided in the north of India into 18 books (*Parvans*), sometimes including the 19th, the Harivamça; in the south it exists in 24 books, and the various chapters differ materially in sundry versions, both in text and size. The most comprehensive and enlightening critical work in this line has been done by the Danish philologist, Sore Sorensen, in his compendium on Hindū literature (Copenhagen 1843). A careful examination of the whole text unavoidably betrays the mixed origin of the Mahābhārata, shows plainly the earmarks of having been worked over, revamped, added to, and that numberless scribes have probably been busy at this task for a period exceeding 10 or 12 centuries. The composite character of the poem is also shown by the different metres, contents and spirit. By some scholars, such as Hopkins and Dahmann, the conclusion has been reached that there were earlier portions of the epic than now remain; perhaps, as Grierson holds, describing an initial struggle for the possession of northern India between the Aryan settlers and their foes. As it stands at present the poem — meaning its

oldest core — is somewhat puerile, since it starts with an account of a gambling match, at which the Kurūs cheated the Pāṇḍus, robbed them of the kingdom, and exiled them for 12 years. While spending this exile in the forests and groves, tales are told to while away the dreary hours. When the exile draws to a close the Kurūs are utterly routed during an 18 days' battle. This story furnishes the backbone; it is crude and in a literary sense sadly deficient, but it doubtless derives from the hoary past. The 20,000 stanzas of rules and instructions to the warrior caste are jumbled, often contradictory. From an artistic point of view the best parts of the whole are episodes like that of Damayānti and Nāla, of Savitri, etc., which have been successfully dramatized. Like all of Hindū literature, even the best, there is a palpable lack of proportion. But there are eminently strong passages, scattered here and there in the whole and showing pathos, tenderness, descriptive powers. The student may be referred to a good summary of the poem, 'Mahābhārata, the Epic of Ancient India,' condensed into English verse by Romesh Dutt (London 1898), to 'Geschichte der indischen Literatur' (Leipzig 1908), by M. Winternitz; to 'Das Mahābhārata' (Kiel 1892-95), by Adolf Holtzmann; or to the English translation of the original work by a Hindū scholar, Protap Chandra Roy (Calcutta 1883).

WOLF VON SCHIERBRAND.

**MAHADEVA**, ma-hā-dā'va, in Hindū mythology, a deity who shares the attributes of Siva in the Indian Trinity, Mahadeva being regarded as a generator as well as a destroyer.

**MAHAFFY**, ma-hā'fi, John Pentland, Irish Greek scholar. b. Chapponaire, near Vevay, Lake Geneva, Switzerland, 12 July 1839; d. Dublin, Ireland, 1 May 1919. He was educated in Germany and at Trinity College, Dublin, from which he was graduated in 1859, and became professor of ancient history in the college in 1871. In 1873 he was Donnellan lecturer. His first publication was a translation of Kuno Fischer's 'Commentary on Kant' (1866); and on philosophical subjects he afterward issued several volumes. The greater number of his works, however, treat of the history, literature and everyday life of ancient Greece, among these being the following: 'Prolegomena to Ancient History' (1871); 'Greek Social Life from Homer to Menander' (1874); 'Greek Antiquities' (1876), a work much used in Continental schools; 'Rambles and Studies in Greece,' a record of antiquarian research (1876); 'Old Greek Education' (1879); 'History of Classical Greek Literature' (1880; 3d ed., 1891); 'Greek Life and Thought from Alexander to the Roman Conquest' (1887), a continuation of the work of 1874; 'The Greek World under Roman Sway' (1890), a continuation of the preceding; 'The Story of Alexander's Empire' (1890); 'Greek Pictures' (1890); and 'Problems in Greek History' (1892); 'The Progress of Hellenism in Alexander's Empire' (1905); 'The Silver Age of the Greek World' (1906); 'What have the Greeks done for Modern Civilization?' (1909). He wrote with special interest and authority of the post-Alexandrian period; and discovered interesting parallels between that and modern civilization. Among



his other writings are 'Twelve Lectures on Primitive Civilization' (1868); 'Report on the Irish Grammar Schools' (1880-81); 'The Decay of Modern Preaching' (1882), and 'The Art of Conversation' (1889); 'An Epoch in Irish History' (1904).

**MAHALEB**, a kind of European cherry (*Cerasus mahaleb*), whose fruit affords a violet dye and a fermented liquor. Its flowers and leaves are used by perfumers, and its wood by cabinet-makers. See **CHERRY**.

**MAHAN**, ma-hän', Alfred Thayer, American naval officer. b West Point, N. Y., 27 Sept. 1840; d 1 Dec 1914. He was graduated from the United States Naval Academy in 1859, and served during the Civil War, rising to the rank of lieutenant-commander in 1865. In 1885 he was promoted captain, and in 1886 was appointed president of the Naval War College at Newport, a position which he held till 1888, and again 1892-93. In 1893-95 he was commander of the *Chicago*, and in 1896 was retired after 41 years' active service at his own request. In 1898 during the war with Spain he was a member of the Naval Board of Strategy; and in 1899 one of the United States delegates to The Hague Peace Conference. In 1906 he was advanced to the rank of rear-admiral on the retired list. In 1890 he published his chief work, 'Influence of Sea Power upon History', the continuation, 'Influence of Sea Power upon the French Revolution and Empire,' appeared in 1892; his other writings include 'The Gulf and Inland Waters' (1883); 'Life of Admiral Farragut' (1892); 'Life of Nelson' (1897), highly commended by English critics; 'The Interest of America in Sea Power' (1897), a compilation of his magazine articles; 'Lessons of the War with Spain' (1899); 'The Problem of Asia' (1900); 'The South African War' (1900); 'Types of Naval Officers' (1901), 'Retrospect and Prospect' (1902); 'Seapower in its Relations to the War of 1812' (1905); 'Some Neglected Aspects of War' (1907); 'From Sail to Steam' (1907); 'Naval Administration and Warfare' (1908); 'The Harvest Within' (1909); 'The Interest of America in International Conditions' (1910); 'Armaments and Arbitration' (1912); 'Major Operations of the Navies in the War of American Independence' (1913).

As a historian he made a distinct contribution to historical science as the first writer to demonstrate the determining force which maritime strength has exercised upon the fortunes of individual nations, and consequently upon the course of general history. Technically, his representative work, the 'Influence of Sea Power upon History,' is but a naval history of Europe from the restoration of the Stuarts to the end of the American Revolution. But the freedom with which it digresses on general questions of naval policy and strategy, the attention it pays to the relation of cause and effect between maritime events and international politics, and the author's literary method of treatment, place this work outside the class of strictly professional writings and make it a recognized leading authority. His prime object, in establishing the thesis that maritime strength is a determining factor in the prosperity of nations, was to reinforce his argument that the future interests of the United

States require a departure from the traditional American policy of neglect of naval-military affairs. Captain Mahan was president of the American Historical Association in 1902-03; and received honorary degrees from several universities, including D.C.L. from Oxford and LL.D. from Cambridge (England), Harvard, Yale, Columbia and McGill universities.

**MAHAN**, Asa, American Congregational clergyman and educator. b. Vernon, N. Y., 9 Nov. 1800; d. Eastbourne, Sussex, England, 4 April 1889. He was educated at Hamilton College, Clinton, N. Y., and Andover Theological Seminary, and after holding pastorates at Pittsford, N. Y., and Cincinnati, Ohio, was president of Oberlin College 1838-50; and also professor of philosophy there. He was president of Cleveland University 1850-56; and of Adrian College, Michigan, 1860-71. After the last-named date he lived mainly in England. Among his works were 'Doctrine of Christian Perfection' (1839); 'System of Intellectual Philosophy' (1845); 'The Will' (1846); 'Science of Logic' (1857); 'Mental Philosophy' (1882); 'History of Philosophy' (1883).

**MAHAN**, Dennis Hart, American military engineer. b. New York City, 2 April 1802, d. near Stony Point, N. Y., 16 Sept. 1871. He was graduated at West Point in 1824, where in 1825 he was appointed assistant professor of mathematics and of engineering. He was stationed in Europe four years on professional duty and in 1832 returned to West Point as professor of military engineering, where he remained until his suicide, which was caused by temporary insanity. His textbooks are generally recognized authorities and include 'Treatise on Field Fortifications' (1836); 'Descriptive Geometry' (1864); 'Military Engineering' (1865); 'Permanent Fortifications' (1867); 'An Elementary Course of Civil Engineering' (1837, rewritten 1868), etc. Consult Abbot, H. L., 'in Biographical Memoirs of the National Academy of Sciences' (Vol. II, Washington 1886).

**MAHAN**, Milo, American Protestant Episcopal clergyman, brother of Dennis Hart Mahan (q.v.). b. Suffolk, Va., 24 May 1819; d. Baltimore, Md., 3 Sept. 1870. He was educated at Saint Paul's College, Flushing, L. I., and in 1845 was ordained in the Protestant Episcopal Church. He was called to the charge of Grace Church, Jersey City, N. J., in 1848, and became assistant at Saint Mark's, Philadelphia, in 1850. In 1857-64 he was professor of ecclesiastical history at the General Theological Seminary, New York. He became rector at Saint Paul's, Baltimore, Md., in 1864 and spent the remainder of his life there. Author of 'The Exercise of Faith' (1851); 'History of the Church During the First Three Centuries' (1860; enlarged to cover seven centuries, 1872); 'Palmoni, a Free Inquiry' (1864); 'The Comedy of Canonization' (1868); 'Collected Works' (3 vols., 1872-75).

**MAHANADI**, mā-hā-nūd'i, or **MAHANUDDY** ('The Great River'), a river in British India. In the upper part of its course it drains the fertile plain of Chhattisgarh in the Central Provinces; flows southeast and then east through the province of Orissa, past Sambalpur and Cuttack, into the Bay of Bengal by two mouths, after a course of about 530 miles.

During the rains it is navigable 30 miles from its estuary, but a large portion of its channel is dry during five or six months of the year, and since the opening of the Bengal and Nagpur Railroad it has been little used for navigation. It is estimated that the Mahanadi drains an area of nearly 44,000 square miles, and during the rainy season about 1,500,000 cubic feet of water passes every second through the Maraj gorge, which amount decreases in dry weather to 1,125 cubic feet. An extensive system of irrigation canals is connected with it. Diamonds are found in this river and in several of its tributaries.

**MAHANOT** (mā-ha-noi') **CITY**, Pa., a borough in Schuylkill County; alt. 1,230 feet; 18m. SW. of Hazleton; on the Lehigh Valley, and the Reading railroads. It is situated in the anthracite coal mining region of the Mahanot Valley; mining was begun here in the early 1860's. The borough's principal industrial products are shirts, hosiery, and other apparel, cigars, and beer. First settlement, by Emanuel Boyer, tavernkeeper, was in 1853; incorporation as a borough, 1863. The name is a Delaware Indian word meaning deer lick; it was originally applied to the creek. Government is by burgess and council. Pop. (1930) 14,784; (1940) 13,442.

**MAHARAJAH**, mā-hā-rā'ja, a title used in India; granted in courtesy to every rajah, or to any person of high rank or deemed holy

**MAHASEER**, mā'ha-sēr, a large and ravenous barbel (*Barbustor*) of India, which reaches six feet in length and in the early part of the rainy season afford the best sport known to the anglers of India and Ceylon, as they take a fly readily, and struggle with the gameness and energy of a salmon to get free, pleasantly taxing the skill of the angler to bring them to land without breaking rod and line. They spawn at the heads of the hill-rivers, and then descend before the young are hatched. The fry then have an opportunity to grow in comparative safety to a size which enables them, the following season, to descend the rivers and take care of themselves; otherwise they would be devoured in infancy by their elders.

**MAHATMA**, a Hindu word meaning "the great-souled one," and applied among the Brahmans to one who has attained the highest possible point of spiritual enlightenment. It is also the name of a high priest or "wise leader" of the theosophists

**MAHAYANA** ("The Great Vehicle"), the name of one of the principal divisions of Buddhism (q.v.). It originated in northern India about the beginning of the Christian era through a gradual synthesis of tendencies already manifest in earlier Buddhism, possibly with some admixture of ideas from the West.

In its philosophy the Mahayana goes beyond primitive Buddhism's denial of the real existence of a soul or ego, and maintains the doctrine of the utter unreality of all experience. This is expressed in the formula "everything is void," which is interpreted by the Madhyamaka, or sceptical, school as meaning that it is impossible either to affirm or to deny anything concerning reality, whereas the Vijnānavādins, or idealists, declare "the void" to be pure thought, without distinction of subject or object. Both

schools admit that the illusion of the phenomenal world is invincible for even the wisest man, and that only the Buddhas are perfectly free from it, so that the practical validity of experience is not impaired

The idea of the Buddha, or "Enlightened One," has received a great extension in the Mahayana, and the human traits of the historic Gautama have been lost in the radiance of divinity. There are countless Buddhas throughout the worlds, and they manifest themselves through infinite periods of time in the various heavens, as well as by appearing on earth in the guise of human teachers. In their function of enlightening all creatures they are aided by the celestial Bodhisattvas, or Buddhas-to-be, who are more actively beneficent. Among the Buddhas the most worshiped is Amitābha, "He of Boundless Light," the ruler of the Western Paradise called Sukhāvati, "Happy Land." This deity, who is quite unknown in the earlier Buddhism, is presumably of solar origin. The merciful Avalokiteśvara and Mañjuśrī, the fount of wisdom, are especially prominent Bodhisattvas. The belief in female Bodhisattvas, such as Tārā and the Chinese Kwan-yin, is a later development, as is also the notion of a "primordial Buddha," or First Cause. All this luxuriant polytheism is harmonized with the doctrine of "the void" through the belief that a Buddha has three "bodies" or modes of being, the "body of the Law," identical with the void, the "body of bliss," an appearance manifested to the celestial beings, and the "body of fabrication," the illusory form of an earthly Buddha such as Gautama

The Mahayanist belief in the powerful and merciful Buddhas and Bodhisattvas is accompanied by a new conception of the religious life. Instead of the older self-centred system of monastic discipline, by which the individual was to obtain final deliverance, Nirvāna, at the close of his present existence, the Mahayanists made it their goal to become Buddhas themselves, after practising all the virtues through numberless existences, for the sake of the salvation of all beings. Everyone who consecrates himself to this aspiration is a Bodhisattva, or potential Buddha, although he will not attain the rank of a celestial Bodhisattva until toward the last of the 10 stages in his career. Self-sacrifice, rather than self-restraint, is therefore the keynote of the ethics of the Mahayana, and though the institution of monasticism is preserved, the discipline is relaxed, and laymen also may follow the career of a Bodhisattva. Prayer and confession of sins to the Buddhas are commanded, and forgiveness is believed to be secured through their superabundant merits.

The broadly human quality of the Mahayana religion involved a certain sacrifice of the distinctive features of Buddhism, and its later development, particularly in the form of the Tantra (q.v.) system, shows a gradual approximation to the contemporary Hinduism. Hence in India the Mahayana ultimately gave way to the Vedānta philosophy and the popular religions of Vishnu and Śiva; but it still survives in the countries to the north and east, whither it had been carried by missionary activity. In Tibet and Mongolia it has assumed the form of Lamaism (q.v.), while in China and Japan it shows more of its primitive character, although

in the latter country especially it has split into numerous sects, some of which hold a decidedly theistic belief.

**Bibliography.**—The sacred books of the Mahāyāna are very numerous and are still imperfectly known. Among those accessible in translations are 'The Lotus of the True Law' (trans. by H. Kern in 'Sacred Books to the East,' Vol. XXI, 1884); various shorter texts in the same series (Vol. XLIX, part 2, 1894); Sāntideva's 'The Path of Light' (trans. by L. D. Barnett, 1909); 'The Awakening of Faith,' sometimes ascribed to Āśvaghosha (trans. by T. Suzuki, 1900). Consult also Suzuki, D. T., 'Outlines of Mahāyāna Buddhism' (1907); Stcherbatsky, 'The Conception of Buddhist Nirvana' (1927).

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**MAHDI**, mā'dē. See MAD MULLAH

**MAHÉ**, mā-hā', Indian Ocean, the largest island of the Seychelles Archipelago, belonging to Great Britain. It is 17 miles long by 4 miles broad, has an area of 55½ square miles and attains an elevation of 2,000 feet above sea-level, from which it rises in most places nearly perpendicularly. It contains Victoria, the administrative seat, and a coaling station with a good harbor. Pop. 20,000. For description of surrounding islands, see SEYCHELLES.

**MAHI KANTHA** (ma'hē kân'tha) **AGENCY**, India, a group of native Gujerat states, administered since 1820 by a British political agent of the province of Bombay. The chief state, Idar, occupies about one-half of the combined area of 3,125 square miles. There are 11 other states of much importance. The climate is fair, April and May being the hottest months, and January the coolest. The average annual rainfall at Idar is 34 inches. About one-fourth of the area is capable of cultivation. During the famine of 1899-1900 a great number of the people perished. Pop. about 450,000, consisting largely of wild Bhil and Khoil tribesmen.

**MAHICAN**, mā-hik'an (meaning "wolf"), an Algonquin tribe of American Indians formerly occupying the Hudson River Valley. They were closely related to the Delawares and the Mohegans, the collective tribes being known as the *Loup* or Wolf Indians. At one time there was a settlement of 40 villages near the site of the present city of Albany. The assaults of the Iroquois and the white settlers diminished the tribe until the remnants of the race became merged with the Delawares. In 1736 those who still remained in Massachusetts, whither they had removed some years before, came together as a unit at Stockbridge and assumed the name of Stockbridge Indians. Later they removed to New York, but now, together with a part of the Munsee, they are located upon a reservation near Green Bay, Wis.

**MAHMUD** (mā-mood') **I**, or **MOHAMMED**, Turkish sultan: b. Constantinople 1696; d. 1754. He was the son of Mustapha II and succeeded his uncle Achmet III in 1730. He was a well-disposed but incapable monarch and his reign is of little importance. See **MOHAMMED**.

**MAHMUD II**, Turkish sultan: b. 20 July 1785; d. 1 July 1839. He was the second

son of Abd-ul Hamid I, and under the reign of his uncle Selim III he received an education exceptionally broad for a prince of his station. He succeeded his brother Mustapha in 1808 and organized his government on a reform basis. He conducted a war against Russia and Serbia until 1812, when by the Treaty of Bucharest Moldavia and a greater part of Wallachia were restored to the Ottoman government, even though the Russian frontier was somewhat advanced. He subjected the Wahabees and quelled the insurrection of Ali Pasha of Janina in 1822. In his war with the Greeks he incurred the intervention of the powers with disastrous results to his forces and by the Treaty of Adrianople (qv) he was obliged to yield so much that his power was greatly weakened. Mahmud was a progressive monarch, he introduced modern ideas of warfare, a regular police system and founded schools. Against serious obstacles he crushed the janissaries, but a second rebellion of Mehemet Ali in 1839 was followed by a defeat which shortly preceded the broad-minded monarch's death.

**MAHMUD**, sultan of Ghazni, the founder of the Mohammedan empire in India: b. Ghazni, about 970; d. 29 April 1030. His father, Sabuktigin, governor of Ghazni, owed a nominal allegiance to Persia, but was really independent. On his death Mahmud put aside his brother Ismail, whom his father had appointed to succeed him, took the title of sultan, then overthrew the Persian monarchy, and laid the foundation of an extensive empire in central Asia. He then turned his attention to India, which he invaded repeatedly. His earlier expeditions into the country were directed against successive rajahs of Lahore, on whom he inflicted repeated defeats. In 1008 the Rajah of Lahore, Anangpal, with the assistance of a powerful coalition of rajahs, had assembled one of the largest armies yet seen in the Punjab, but Mahmud was again victorious and carried away enormous spoils from the temple of Nagarcot. On his return he celebrated a triumph at Ghazni. In 1010, after subduing Ghur in the Hindu-Kush, he resumed his conquests in India, captured Multan, plundered the temple of Tanesar and continued for a number of years to extend his conquests in successive expeditions. These for a time were interrupted by his conquest of Transoxiana, effected in 1016. In 1017 he set out at the head of an army of 100,000 foot and 20,000 horse, passed the Jamna Jummd and turning to the south appeared before Canoj, the largest and most magnificent Indian city of the day, the rajah of which took precedence of all the Indian rajahs. As the Rajah of Canoj at once submitted it was spared from pillage, a fate to which Mattira, a famous religious city, was subjected without restraint for 20 days. In 1023 he annexed the territories of Icpal II who had revolted and established for the first time a permanent Mohammedan garrison in Lahore. His last, which is usually called his 12th, expedition into India (1024-26) was directed against Gujerat. He took the capital and changed the government, but the chief attraction was Somnāth. The magnificence of its temple filled him with wonder and the descriptions of it suggest images of the palace of Aladdin. Its lofty roof was supported by 56 pillars carved and glittering with

precious stones. It was lighted by a lamp suspended from the centre by a gold chain. A huge idol, which Mahmud broke, was found hollow and disclosed immense treasures in diamonds and precious stones. The pieces of the idol were sent to Mecca, Medina and Ghazni. The remainder of his enterprises were confined to western Asia. Mahmud was avaricious and loved to accumulate treasures from his warlike expeditions. Consult Elliot, 'History of India'; Lane-Poole, 'Mediaeval India under Mohammedan Rule' (London 1903).

**MAHMUD, Shevket Pasha**, Turkish soldier and statesman: b. Bagdad 1857; d. 11 June 1913. At 24 he came under the influence of the German general von der Goltz, then reorganizing the Turkish army and by whom he was sent to purchase war material in Germany and France. After 10 years' sojourn in western Europe, Mahmud Shevket returned home with advanced ideas. As governor of the vilayet of Kossovo he threw in his lot with the Young Turk revolution in 1909. The new ministry placed him in command of an army corps at Salonica. He suppressed the counter-revolution in Constantinople and in 1910 became Minister of War until 1912. In January 1913 he was appointed Grand Vizier and War Minister combined, in which capacity he concluded peace with the Balkan League (q.v.). He was murdered while motoring to the Porte.

**MAHO, or MAHAGUA.** The West Indian names of an important fibre plant, *Hibiscus tiliaceus* or linden hibiscus, lemon hibiscus or corkwood, a member of the mallow family. It is a handsome woody shrub or small tree with large lemon-yellow flowers and entire broadly cordate leaves like linden. Low banks of tidal rivers is its favorite habitat and it is widely distributed over tropical America, Polynesia and the shores of the Indian Ocean. In some of the Pacific islands it grows spontaneously in large areas which have been abandoned after previous cultivation. The bark contains a strong flexible fibre used for many purposes, especially by the aborigines who also used the wood for making fire in the primitive fashion. The dark green heart wood is very tough and durable. The plant has remarkable properties of renewing fertility of soil which has been exhausted by crops. The maho is considered indigenous to America and apparently on account of its useful character it was distributed widely over the islands and shores of the Pacific and Indian oceans before the arrival of Europeans. The etymology of its names in various regions gives some important clues as to the history of its distribution.

**MAHOGANY.** A popular name for the timber of several unrelated trees, among which are various species of eucalyptus (q.v.), natives of Australia and members of the family *Myrtaceæ*; two species of *Cercocarpus*, of the family *Rosaceæ*, *C. montanus* being known as valley mahogany and *C. ledifolius* as mountain mahogar, in the Rocky Mountain region where they are native and are mainly used for fuel. African mahogany (*Khya senegalensis*), East Indian mahogany (*Soymda febrifuga*), and *Cedrela toona*, an East Indian tree equally well known also as the toona, all belong to the family *Meliaceæ*, but are less important timber trees than the true mahogany (*Swietenia*

*mahagoni*) of the same family. This species is a native of tropical America, occasional small specimens being found in extreme southern Florida. It was formerly abundant in the West Indies, attaining heights of 150 feet or more in Jamaica, but on account of the demand it is now scarce. Cuba and Santo Domingo formerly supplied the choicest; Honduras the low grades; now practically all comes from Central America. The wood is generally some shade of brown, fine grained, easily polished and durable except under lateral strain. It is highly valued for furniture, musical instruments, interior house-finishings, etc., and is one of the most popular woods of the world. Formerly it was used for ship-building but now very little. The tree, which sometimes attains heights exceeding 100 feet, and diameters of six feet, has abruptly pinnate leaves with usually four pairs of leaflets, and small white or yellowish flowers in axillary or nearly terminal panicles. As an ornamental tree it is planted in southern Florida and southern California in rich soil. A few other related species of this genus are occasionally found in commerce.

**MAHOMET.** See MOHAMMED.

**MAHOMMEDAN LAW.** See MOHAMMEDANISM.

**MAHON**, ma-hōn', or **PORT MAHON** (ancient *Portus Magonis*), Spain, city and port, on the island of Minorca, of which it is the capital, at the head of a bay which forms one of the best harbors on the Mediterranean. Fishing, fish-curing, agriculture and stock raising are the chief occupations. In the bay are several rocky islets, on one of which stands an arsenal, on a second a lazaretto and on a third a naval hospital. There are also a fine church, the consistorial palace, a theatre, museum and library. The harbor is strongly fortified. The exports are brandy, wine, dried fruits, agricultural produce, etc.; and the imports, grain, wearing apparel, tobacco, sugar, coffee, cacao, leather, hats and other manufactured goods. Its trade amounts to about \$1,000,000 annually. Mahon is believed to have been founded by the Carthaginian general Mago, whence its ancient name. It was occupied by the English in 1708. It was taken from them, after a memorable siege, by the French under Marshal Richelieu on 28 June 1756. Admiral Byng was shot for failing to relieve it. It was restored to the English in 1763; and taken by the Spaniards in 1782. It was retaken in 1798, and finally given to Spain by the Treaty of Amiens in 1802. Pop. 17,542.

**MAHONE**, ma-hōn', **William**, American soldier and politician: b. in Southampton County, Va., 1 Dec 1826; d. Washington, D. C., 8 Oct. 1895. He was graduated at the Virginia Military Institute in 1847, and became a civil engineer and railroad constructor. At the opening of the Civil War he entered the Confederate army; took part in the Peninsular and Rappahannock campaigns, and by bravery at Petersburg acquired the sobriquet "The Hero of the Crater." (See PETERSBURG, MILITARY OPERATIONS AGAINST). In 1864 he was made brigadier-general and major-general. The war over, he accepted the presidency of the Norfolk and Tennessee Railroad, and also became active in politics. He was the principal organizer (about

1878) and leader of the Readjusters (q.v.), chiefly a faction of the Democratic party in Virginia who favored the forcible readjustment of the State debt on terms involving conditional or partial repudiation. Mainly by the supporters of this movement, he was elected in 1880 to the United States Senate, where, however, he acted with the Republicans, making the vote of the Senate a tie and disappointing the Democrats of their expected majority. By this and other acts of his senatorial career he lost favor with his constituents and was not re-elected.

**MAHONY**, mah'-ō-nī, **Francis Sylvester**, "Father Prout," Irish author: b. Cork 1804; d. Paris, 1866. Educated at a Jesuit seminary at Amiens, he studied theology at Paris, was admitted into the Order of the Jesuits and taught for some time in a Jesuit college in Ireland, but for some irregularities was deprived of the position of a member of the order. He received clerical ordination and officiated for a short time at Cork and in London, but soon adopted the profession of literature. In 1834-36 he contributed the 'Prout Papers' to *Fraser's Magazine*, published as the 'Reliques of Father Prout' in 1836. In 1846 he became Rome correspondent to the London *Daily News*, his letters being afterward republished as 'Facts and Figures from Italy' (1847). In his later years he was Paris correspondent for the *Globe*. The 'Reliques of Father Prout' in a revised and enlarged form were published in 1860, and 'Final Reliques' in 1876. In 1881 Charles Kent published a collective edition with a memoir. He will be longest remembered by his poem 'The Bells of Shandon.'

**MAHRATTAS**, mā-rāt'-az, a native Hindu race, supposed to be descendants of the Persians, and occupying a large tract of central and western India. They have always been a distinct nation or people, and still consider themselves as such, even though now largely under British or Mohammedan jurisdiction. They came into prominence about the middle of the 17th century, when the chief, Sevaji extended his conquests in various directions, had himself crowned king in 1674 and established the Mahratta Empire. After his death long minorities and the incompetency of the sovereigns caused the powers of the state to fall into the hands of the *Peshwa* or Prime Minister, who became the acknowledged head of a Mahratta confederacy. The first trouble with the British broke out in 1775 and was not settled until 1782. This happened during the administration of Warren Hastings (q.v.). The next outbreak came in 1803-05 and resulted not only in the acquisition of territory by the British but also in strengthening their power. Meanwhile the confederacy had held together till 1795, but internal wars and disturbances reduced the *Peshwa* to the position of a British dependent, and Scindia, Holkar and the Rajah of Berar were able to take the position of independent sovereigns. The confederacy came to a final end in 1818, after the third collision wherein the *Peshwa* himself took up arms against the British, and Scindia, Holkar, the Guicowar of Baroda, and the Rajah of Kolapore became dependent princes under British protection. The state of Gwalior came under British control in 1844. Though devout worshippers of **Brahma**, no distinction of caste exists among

them. Consult Grant-Duff, 'History of the Mahrattas' (Bombay 1863); Kincaid, C. A. and Parasnis, R., 'A History of the Maratha People' (Vol. I, London 1919); Ranade, 'Rise of the Maratha Power' (ib. 1900); 'Imperial Gazetteer of India' (Oxford 1909).

**MAI**, Angelo, an'-jā-lō mā'ē or mī, CARDINAL, Italian classical scholar. b. Schilpario, near Bergamo, Italy, 7 March 1782; d. Albano, 8 Sept. 1854. His abilities attracted the notice of Father Mozzi, a Jesuit, who instructed him in Latin, Greek and mathematics. On the establishment of a Jesuit college at Colorno, in the duchy of Parma, he accompanied Father Mozzi thither in 1799, and a few years afterward was made professor of Latin and Greek in the Jesuit college at Naples (1804). He was transferred to Milan (1808), where he became an associate of the Ambrosian College, and one of the curators of the Ambrosian Library. One special department to which he devoted himself was the examination of the palimpsests (q.v.) and through his industry in deciphering these, two volumes of fragments of Cicero's orations, of Lysimachus and of Isæus, a fragment of the 'Vidularia' (a lost comedy of Plautus), and a collection of the letters and other writings of Cornelius Fronto, the preceptor of Marcus Aurelius, were recovered and given to the world. In 1819 he was appointed chief keeper of the Vatican Library at Rome, and discovered beneath a manuscript of Saint Augustine's 'Enarrationes in Psalmos' obliterated fragments of Cicero's treatise 'De Republica,' amounting to about a fourth of the original, which he published in 1822 with a critical commentary. A colossal work was then undertaken by Mai, the editing of the various unpublished manuscripts in the Vatican, sacred and profane. It comprises 10 quarto volumes, under the title of 'Scriptorum Veterum Nova Collectio e Vaticanis Codicibus Edita' (1828-38), and consists of numerous fragments, previously believed to be lost, of the ancient historians, such as Polybius, Diodorus Siculus, Dionysius of Halicarnassus, Dion Cassius, Appian and others, besides the various writings of the Fathers. In 1838 he was created a cardinal. A new collection, 'Spicilegium Romanum,' was published in 10 volumes between 1839 and 1844, and a patristic series, called 'Nova Patrum Bibliotheca,' issued between 1845 and 1853, closed his list of publications. Consult his life by G. Poletto (Siena 1887); also Prina, B., 'Biografia del cardinale Angelo Mai' (Bergamo 1882); Sandys, J. E., 'A History of Classical Scholarship' (Vols. I, III, Cambridge 1908).

**MAIA**, mā'ya, in Greek mythology, the eldest daughter of Atlas and Pleione. She was placed with her six sisters among the stars, where they have the common name of *Pleiades*. The Romans also worshiped a Maia, who was also called *Majesta*, and was afterward identified with the daughter of Atlas. The Tuscans called their principal deity *Majus*. The month of May is said to have received its name from them.

**MAID OF ATHENS**, immortalized by Lord Byron, was Theresa Macri, who 25 years after Byron's poem was written had lost her beauty, lived in a hovel in dire poverty and had reared a large family.



**MAID MARIAN**, a name given Matilda, daughter of Fitz-Walter, baron of Bayard and Dummow. She eloped with Robert Fitz-Ooth, an outlaw, and lived with him in Sherwood Forest. It is supposed that she was married by Friar Tuck to Fitz-Ooth, who was more commonly called Robin Hood (q.v.).

**MAID OF THE MIST**, (1) the name of a small steamboat used on the Niagara River below the Falls, to carry passengers close to the cataract. (2) A name given to the heroine of Sir Walter Scott's 'Anne of Geierstein'.

**MAID OF ORLEANS**, a name given Jeanne d'Arc (1412-31). See **JOAN OF ARC**.

**MAIDEN**, or **THE WIDOW**, an instrument of capital punishment used in Scotland during the 16th century, the prototype of the French guillotine (q.v.). It consisted of an upright frame and a broad piece of iron a foot or more wide, sharp on the lower part and loaded above with lead. At the time of execution this was pulled up to the top of the frame, in which was a groove on each side for it to slide in. The prisoner's neck being fastened to a bar underneath, on a sign given the cutting iron was let loose, and the head instantly severed from the body. Its first victim is said to have been Thomas Scott, executed 3 April 1565, one of the agents in the assassination of Rizzio. In 1581 it was used in the execution of the Earl of Morton, the alleged inventor.

**MAIDEN QUEEN**, in England, a popular title bestowed upon Queen Elizabeth.

**MAIDENHAIR FERN**. See **FERNS AND FERN ALLIES**.

**MAIDENHEAD**, England, market town and municipal borough in Berkshire, on the Thames, 24 miles west of London, on the Great Western Railway. It is an ancient town and was formerly known as Maydenhutt, or Maydenhuth, and while its stone bridge which takes the London road over the Thames dates only from 1772 there are records of earlier bridges as early as 1297. It was incorporated as a guild to maintain the bridge by Henry VI, in 1451. It had formerly a large carrying trade in malt, meal and timber but it is now principally a residential town and pleasure resort for boating parties. The Wednesday market is still held under the charter of Queen Elizabeth, dating from 1582. Pop. about 17,000.

**MAIDSTONE** (Saxon *MEDWEGESTUN*) England, municipal and Parliamentary borough and the county town of Kent, 34 miles east-southeast from London, on the banks of the Medway. The town consists chiefly of four principal streets, which cross each other at the market-place, with smaller ones branching off at right angles. Its fine old Collegiate Church of All Saints is supposed to be of the 14th century, and is one of the largest parish churches in England. It has historical associations with the rebellions of Jack Cade and Sir Thomas Wyatt, and was stormed by the Parliamentarians under Fairfax in 1648. It has excellent educational institutions; schools, libraries, science and art institutions, museums, play grounds and parks. The chief industries are paper-making (for which there are several large mills), brewing, iron founding and the manufacture of agricultural implements. It is the

centre of a great hop district, the cultivation of hops having been carried on since the seventeenth century. Corn markets and cattle markets are still held every week. From ancient Saxon times until 1830 malefactors were executed on Penenden Heath, now enclosed as a public recreation ground. Pop. 42,000.

**MAIDU PEOPLE**, an aboriginal Pujunan group of Indians of northern California, of which the chief tribe, the Concow, inhabited the region of the Upper Sacramento River. Their descendants are to be found in the Round Valley Reservation. Their communities comprised rough dwelling-places or hogans built of boards, large circular halls or town-houses for assemblies and ceremonials and wicker store-houses for the winter supply of acorns which with pignons formed their staple food supplies. Their clothing was of the scantiest description; the chief of their numerous dances was the acorn dance; and they had a secret male society in which the initiatory age was 12. Consult Dixon, R. B., 'Maidu' (in Boas, 'Handbook of American Indians,' Washington 1911); id., 'Maidu Texts' (in American Ethnological Society Publications, Vol. IV, Leyden 1912).

**MAIGNAN, Albert**, *âl-bâr mǎ-nyân*, French painter: b. Beaumont, Sarthe, 14 Oct. 1845; d. Paris, 29 Sept. 1908. He studied at Paris under Noël and developed a strong and original manner in historical and landscape painting. At the Salon of 1879 he was awarded a first class medal. Amongst the most striking of his pictures are 'Dante's Meeting with the Countess Matilda' (1881) now in the Luxembourg; and 'Assault on Pope Boniface VIII at Anagni' in the New York Metropolitan Museum of Art.

**MAIGRE**, *mǎ'ger*, or **MEAGRE**, a large European drum-fish (*Sciaenops ocellatus*), common in the Mediterranean, where it forms one of the most important local food-fishes. It may attain a length of six feet, and its flesh has always been a favorite with epicures. Yarrell says that anciently on account of its large size it was always sold in pieces, and that the fishermen of Rome were accustomed to present the head, considered the finest part, as a sort of tribute to the three local magistrates who acted for the time as the conservators of the city.

**MAIL-SHELL**. See **CHITON**.

**MAILDUN**, *mal'doon*, **MAELDUIN**, or **MAELDUNE**, hero of Irish romance, 'Voyage of Mairdun.' He was the son of Ailill Ócar Aga, of the tribe of Owenaght of Ninus, in County Clare, and before his birth his father was killed by pirates. He grew up handsome and accomplished, but had scarce reached manhood before he set sail with a crew of 60 men to find his father's murderer. For three years and seven months he voyaged on the Western Ocean seeing marvels such as no eyes had seen before. At length he found the murderer of his father, but pardoned him his wrong in gratitude to the great mercy of God who had delivered him from so many perils. Consult Joyce, P. W., 'Old Celtic Romances' (tr. from Gaelic, 3d ed., New York 1898); Tennyson, 'The Voyage of Maeldune'.

**MAILLY, William**, American Socialistic journalist: b. Pittsburgh, Pa., 22 Nov. 1871; d. 4 Sept. 1912. He was educated in the common schools of Scotland and England, and in 1895-

96 was editor of the Birmingham *Labor Advocate*. He returned to the United States and in 1898 organized the Social Democratic party of New York. He edited the *Social Democrat* at Haverhill, Mass., in 1899-1900; was associate editor of *The Worker* in New York in 1901 and in 1906-07; and managing editor of New York *Evening Call* in 1908-09. He was one of the organizers of Social Democrat, later Socialist, party at Chicago in 1898; organizer and secretary of the Socialist party of Massachusetts in 1902; and in 1905-06 he was a member of the National Executive Committee of the Socialist party.

**MAIMON**, mī'mōn, Salomon, German philosopher: b. near Mir in Minsk, 1754; d. Siegersdorf, Lower Silesia, 22 Nov. 1800. He was trained for a rabbi, but having become acquainted with the philosophy of Maimonides, he made his way to Berlin, and studied modern philosophy, languages and some science. Besides cultivating his own mind, and teaching a little, he wrote some philosophical treatises and literary hack-work. Yet he had Mendelssohn, the philosopher, among his friends, was admired by Kant and attracted the attention of Goethe. This he owed to his 'Attempt at a Philosophy of Transcendentalism' (1790), in which he set out to supplement Kant's system with truths gleaned for the most part from Spinoza, Leibnitz, Hume, Locke and others. Consult Witte, 'S. Maimon' (Berlin 1876).

**MAIMONIDES**, mī-mōn'ī-dēz, properly MOSES BEN MAIMON BEN JOSEPH (Arabic, Abu Amram Musa ibn Maimun Obeid Allah al Kortobi), Jewish scholar: b. Cordova, Spain, 30 March 1135; d. 13 Dec. 1204. At an early period he developed a taste for the exact sciences and for philosophy. He read with zeal not only the works of the Mohammedan scholastics, but also those of the Greek philosophers in such dress as they had been made accessible by their Arabian translators. In this way his mind, which by nature ran in logical and systematic grooves, was strengthened in its bent; and he acquired that distaste for mysticism and vagueness so characteristic of his literary labors. He went so far as to abhor poetry, the best of which he declared to be false, since it was founded upon pure invention—and this too in a land which had produced such noble expressions of the Hebrew and Arab muse. It is strange that this man, whose character was that of a sage, and who was revered for his person as well as for his books, should have led such an unquiet life, and have written his works so full of erudition with the staff of the wanderer in his land. For his peaceful studies were rudely disturbed in his 13th year by the invasion of the Almohades, or Mohammedan Unitarians, from Africa. They not only captured Cordova, but set up a form of religious persecution which happily is not always characteristic of Islamic piety. Maimonides' father wandered to Almeria on the coast; and then (1159) straight into the lion's jaws at Fez in Africa,—a line of conduct hardly intelligible in one who had fled for the better exercise of the dictates of conscience. So pressing did the importunities of the Almohad fanatics become, that together with his family Maimonides was compelled to don the turban, and to live for several years the life of an Arabic Marrano. This blot upon his

fair fame—if blot it be—he tried to excuse in two treatises, which may be looked upon as his "Apologia pro vita sua": one on the subject of conversion in general (1160), and another addressed to his coreligionists in southern Arabia on the coming of the Messiah. But the position was untenable and in 1165 we find Maimonides again on the road, reaching Accho, Jerusalem, Hebron and finally Egypt. Under the milder rule of the Ayyubite caliphs, no suppression of his belief was necessary. Maimonides settled with his brother in old Cairo or Fostat, gaining his daily pittance first as a jeweler, and then in the practice of medicine, the while he continued in the study of philosophy and the elaboration of the great works upon which his fame reposes. In 1177 he was recognized as the head of the Jewish community of Egypt, and soon afterward was placed upon the list of court physicians to Saladin. When he died, his body was taken to Tiberias for burial.

Perhaps no fairer presentation of the principles and practices of rabbinical Judaism can be cited than that contained in the three chief works of Maimonides. His clear-cut mind gathered the various threads which Jewish theology and life had spun since the closing of the Biblical canon, and wove them into such a fabric that a new period may fitly be said to have been ushered in. The Mishnah had become the law-book of the Diaspora; in it was to be found the system of ordinances and practices which had been developed up to the 2d century A.D. In the scholastic discussions in which the Jewish schoolmen had indulged their wit and their ingenuity, much of its plain meaning had become obscured. At 23 Maimonides commenced to work upon a commentary to this Mishnah, which took him seven years to complete. It was written in Arabic, and very fitly called 'The Illumination'; for here the philosophic training of its author was brought to bear upon the dry legal mass, and to give it life as well as light. The induction of philosophy into law is seen to even more peculiar advantage in his 'Mishnah Torah' (Repeated Law). The scholastic discussions upon the Mishnah had in the 6th century been put into writing, and had become that vast medley of thought, that kaleidoscope of schoolroom life, known by the name of Talmud. Based upon the slender framework of the Mishnah, the vast edifice had been built up with so little plan and symmetry that its various ramifications could only be followed with the greatest difficulty and with infinite exertion. In turn, the Talmud had supplanted the Mishnah as the rule of life and the directive of religious observance. Even before the time of Maimonides, scholars had tried their hand at putting order into this great chaos; but none of their efforts had proved satisfactory. For 10 years Maimonides worked and produced this digest, in which he arranged in scientific order all the material which a Jewish jurist and theologian might be called upon to use. Though this digest was received with delight by the Jews of Spain, many were found who looked upon Maimonides' work as an attempt to crystallize into unchangeable law the fluctuating streams of tradition. The same objection was made to his attempt to formulate into a creed the purely

theological ideas of the Judaism of his day. His 'Thirteen Articles' brought on a war of strong opposition; and though in the end, the fame of their author conquered a place for them even in the Synagogue Ritual, they were never accepted by the entire Jewry. They remained the presentation of an individual scholar.

But his chief philosophical work, his 'Guide of the Perplexed' (*Dalālat al-Hāirin*), carried him still further and for centuries fairly divided the Jewish camp into two parties. The battle between the Maimonists and anti-Maimonists waged fiercely in Spain and Provence.

In the 'Guide of the Perplexed' Maimonides has also produced a work which was "epoch-making in Jewish philosophy." It is the best attempt ever made by a Jew to combine philosophy with theology. Aristotle was known to Maimonides through Al-Farābī and Ibn Sīnā (Avicenna); and he is convinced that the Stagyrīte is to be followed in certain things, as he is that the Bible must be followed in others. In fact, there can be no divergence between the two; for both have the same end in view,—to prove the existence of God. The aim of metaphysics is to perfect man intellectually; the same aim is at the core of Talmudic Judaism. Reason and revelation must speak the same language; and by a peculiar kind of subtle exegesis—which provoked much opposition, as it seemed to do violence to the plain wording—he is able to find his philosophical ideas in the text of the Bible. But he is careful to limit his acquiescence in Aristotle's teachings to things which occur below the sphere of the moon. He was afraid of coming into contact with the foundations of religious belief, and of having to deny the existence of wonders. The Bible teaches that matter was created, and the arguments advanced in favor of both the Platonic and Aristotelian views he looks upon as insufficient. The Jewish belief that God brought into existence not only the form but also the matter of the world, Maimonides looks upon much as an article of faith. The same is true of the belief in resurrection. He adduces so little proof for this dogma that the people of his day were ready to charge him with heresy.

Maimonides is able to present 25 ontological arguments for his belief in the existence, unity and incorporeality of God. What strikes one most is the almost colorless conception of the Deity at which he arrives. In his endeavor to remove the slightest shadow of corporeality in this conception, he is finally led to deny that any positive attributes can be posited of God. Such attributes would only be "accidentia"; and any such "accidentia" would limit the idea of oneness. Even attributes which would merely show the relation of the Divine Being to other beings are excluded; because he is so far removed from things non-Divine, as to make all comparison impossible. Even existence, when spoken of in regard to him, is not an attribute. In his school language, the "essential" of God involves his "existentia." We have therefore to rely entirely upon negative attributes in trying to get a clear concept of the Deity.

If the Deity is so far removed, how then is he to act upon the world? Maimonides supposes that this medium is to be found in the world of the spheres. Of these spheres there

are nine: "the all-encompassing sphere, that of the fixed stars, and those of the seven planets." Each sphere is presided over by an intelligence which is its motive power. These intelligences are called angels in the Bible. The highest intelligence is immaterial. It is the *noûs poietikós*, the ever-active intellect. It is the power which gives form to all things and makes that which was potential really existent. "Prophecy is an emanation sent forth by the Divine Being through the medium of the active intellect, in the first instance to man's rational faculty and then to his imaginative faculty. The lower grade of prophecy comes by means of dreams, the higher through visions accorded the prophet in a waking condition. The symbolical actions of the prophets are nothing more than states of the soul." High above all the prophets Maimonides places Moses, to whom he attributes a special power, by means of which the active intellect worked upon him without the mediation of the imagination. The psychological parts of the 'Guide' present in a Jewish garb the Peripatetic philosophy as expounded by Alexander of Aphrodisia. Reason exists in the powers of the soul, but only potentially as latent reason (*noûs hulkos*). It has the power to assimilate immaterial forms which come from the active reason. It thus becomes acquired or developed reason (*noûs epiktetos*); and by still further assimilation it becomes gradually an entity separable from the body, so that at death it can live on unattached to the body. In ethics Maimonides is a strong partisan of the doctrine of the freedom of the will. No one moves him, no one drives him to certain actions. He can choose, according to his own inner vision, the way on which he wishes to walk. Nor does this doctrine involve any limitation of the Divine power, as this freedom is fully predetermined by the Deity. But Maimonides must have felt the difficulty of squaring the doctrine of the freedom of the will with that of the omniscience of God; for he entrenches himself behind the statement that the knowledge of God is so far removed from human knowledge as to make all comparison impossible. Again, in true Aristotelian style, Maimonides holds that those actions are to be considered virtuous which follow the golden mean between the extremes of too much and too little. The really wise man will always choose this road; and such wisdom can be learned; by continued practice it can become part of man's nature. He is most truly virtuous who has reached this eminence, and who has eliminated from his own being even the desire to do wrong.

The daring with which Maimonides treated many portions of Jewish theology did not fail to show its effect immediately after the publication of the 'Guide.' His rationalistic notions about revelation, his allegorizing interpretation of Scripture, his apparent want of complete faith in the doctrine of resurrection, produced among the Jews a violent reaction against all philosophical inquiry, which lasted down to the times of the French Revolution. Even non-Jews looked askance at his system. In Montpellier and in Paris, his own Jewish opponents, not content with having gotten an edict against the use of the master's writings, obtained the aid of the Church (for the 'Guide' had been translated into Latin in the 13th century), and had it publicly consigned to the flames. But all

this was only further evidence of the power which Maimonides wielded. The Karaites copied it; the Kabbalah even tried to claim it as its own. Many who were not of the house of Israel, as Thomas Aquinas and Albertus Magnus, acknowledged the debt they owed the Spanish rabbi; and Spinoza, though in many places an opponent, shows clearly how carefully he had studied the 'Guide of the Perplexed'. Consult Yellin and Abrahams, 'Maimonides,' and the authorities there mentioned; Neumark, 'Geschichte der jüdischen Philosophie des Mittelalters' (Vols. I-II, Berlin 1907-10).

GUSTAV GOTTHEIL.

**MAIN**, măn, Hubert Platt, American composer and editor. b. Ridgefield, Conn., 17 Aug. 1839; d. 7 Oct. 1925. He was educated in the public schools and for 59 years was editor of song collections and other publications for church, Sunday school and college use, besides composing many songs and hymns. His works include 'Gems of Song for the Sunday School' (1901); 'Gloria Deo' (1901); 'Devotional Songs' (1903); 'Hallowed Hymns' (1907); 'Bixby's Home Songs' (1909); 'Hebrew Hymnal' (1910); Ode Book, 'Eastern Star' (1911); 'Mission Hymnal' (1911-14); 'Quartettes and Choruses—Male Voices' (1912); 'Hamilton College Songs' (1915). He also compiled 'A Dictionary of American Musicians and Poets.'

**MAIN**, măn (Ger. mîn), or **MAYN**, a river of Germany, which has its source in the north-eastern part of Bavaria, about 13 miles north-west of Bayreuth. It flows northwest to the border of Bavaria, and then makes a succession of remarkable zigzags, continuing, however, in a westerly direction, till it reaches the border of the grand-duchy of Hesse, which it enters. It then flows circuitously west, partly forming the boundary between Hesse and the Prussian province of Hesse-Nassau, and joins the Rhine a little above the town of Mainz, after a course of over 300 miles. The principal cities which it passes are Würzburg, Aschaffenburg and Frankfort. It is navigable for about 200 miles, and by improvements the largest Rhine steamers can ascend to Frankfort. By means of King Ludwig's Canal it affords through navigation to the Danube.

**MAINE**, măn, Sir Henry James Sumner, English jurist. b. Caverham Grove, Reading, England, 15 Aug. 1822; d. Cannes, France, 3 Feb. 1888. He was educated at Cambridge, where he was regius professor of civil law 1847-54. He was in India as legal member of the council, 1862-69. On his return, in 1869, he was appointed professor of jurisprudence at Oxford, and held this post till 1878. He was appointed master of Trinity Hall, Cambridge, 1877, and professor of international law at Cambridge, 1887-88. Among his more noted works were 'Ancient Law' (1861), an epoch-making book; 'Village Communities' (1871); 'Popular Government' (1885). Consult Duff, 'Sir Henry Maine: a Brief Memoir of his Life' (1892).

**MAINE DE BIRAN**, măn dè bē-rôn, François Pierre Gonthier, French philosopher. b. Bergerac (Dordogne), 29 Nov. 1766; d. Paris, 16 July 1824. He entered the Life Guards of Louis XVI in 1785, was present at Versailles

on 5-6 Oct. 1789, but was not concerned in the Revolution. He opposed Napoleon in the latter part of his reign, and became a legitimist at the Restoration. His chief philosophical essays are 'Influence de l'habitude' (1803); 'Sur la décomposition de la pensée'; 'Sur l'appréhension immédiate,' and 'Rapports du physique et du moral'. Very little of his writing appeared during his lifetime, but in 1834 some of his essays were published by Victor Cousin who in 1841 published a more complete edition. The publication of his important writings by E. Naville in 1859 made possible the first connected study of his philosophical development. Maine de Biran's importance as a philosopher is chiefly due to his giving the direction to philosophic speculation afterward developed in the school founded by Cousin. Consult Naville, E., 'Maine de Biran' (3d ed., Paris 1874); Couaillhac, M., 'Maine de Biran' (Paris 1905).

**MAINE**, the name given as early as 1622 to distinguish the *main land* from the islands. It was called in the Mason and Gorges Patent "the Mayn Land of New England," and in the great charter "Province of Maine." It is one of the New England group of North Atlantic States and the most easterly State of the Union. It is between lat. 43° 4' and 47° 28' N, and between long 66° 57' and 71° 7' W. It is bounded on the north by Quebec and New Brunswick, provinces of Canada, on the east by New Brunswick and the Atlantic Ocean, on the south by the Atlantic and on the west by the State of New Hampshire and the province of Quebec. Its greatest extent is from north to south; its greatest length about 303 miles and its greatest width about 212 miles; area, 33,215 square miles, of which 2,175 square miles are water surface. Maine is as large as all the rest of the New England group lacking 385 square miles, and it is the 37th in size among the States of the Union.

**Topography.**—While its northeastern and a portion of its southwestern boundary lines are straight, its others are irregular, especially its coast line, which, fringed by islands, is indented by numerous bays, giving it a shore length of over 2,000 miles, though a direct line drawn from its two extremities would be but about a tenth of its real length. This irregular coast line, bold and rugged from its eastern extremity until it reaches Penobscot Bay, becoming lower as it approaches the south, is most picturesque throughout its entire length, much of it being bordered by sandy beaches and thick forests reaching to the water's edge. There are more good harbors on the coast of Maine than on that of any other State on the Atlantic seaboard.

There are two general mountain slopes in Maine, the highest part extending across the State from north of the source of the Megalloway River in the west, northeast to Mars Hill. South of the main divide is Mount Katahdin, 5,385 feet in height; Mount Abraham, 3,387; Saddleback, 4,000, and Mount Blue, 3,900 feet in height, all in Franklin County. Green Mountain on Mount Desert Island is 1,800 feet high, and is one of the numerous peaks more or less conical in form, isolated or in clusters, comparatively bare of soil and densely wooded about their bases. There is no long range of mountains in the State.

**Hydrography.**—That portion of the State north of the main divide is drained almost wholly by the Saint John River and its tributaries, and the part south of the main divide is drained chiefly by the Androscoggin, Kennebec, Penobscot and Saint Croix rivers. The basin of Saint John River has an area of about 7,425 square miles. The head-waters of this river are in the northwestern part of Maine and the eastern part of Quebec, and it flows north by east for some distance past Saint Francis on the north to the extreme northeastern boundary, where it makes a turn and flows generally southeast through New Brunswick to the Bay of Fundy. The largest Maine tributaries of the Saint John are the Aroostook and the Allegash. The waters of a large number of the lakes of Maine find their outlet through the Saint John. The rivers south of the main divide flow generally south to the ocean. The source of the Kennebec is about 2,000 feet above the sea, of the Penobscot over 2,300 feet, of the Androscoggin about 3,000 feet and of the Saco in the southwest nearly 2,000 feet. They, together with their tributaries, are swiftly flowing streams, in many places passing over rocky beds which form rapids and falls and furnish extensive water powers. From the report of the Maine State Water and Storage Commission it appears that Maine ranks third among the States of the Union in developed horse power which is estimated to be in excess of 400,000 horse power. Its storage facilities are estimated at 400,000 horse power more, which, with over 1,000,000 undeveloped horse power, make a total of over 1,800,000 possible water horsepower. It is among the greatest of the State's assets. Attempts on the part of interests outside the State to gain control of this power led to the enactment of measures prohibiting the transmission of hydro-electric power beyond the State's borders. Efforts were made in the years following to obtain a modification of this policy, but they failed, and this has become the fixed policy of the State. An interesting development was the plan of Duncan C. Cooper to utilize the enormous power generated by the tides of the Bay of Fundy. By referendum, in 1925, the State gave its consent to the distribution of power thus obtained beyond the borders of the State. The flow of the tide is so great on the coast that it has been estimated "that with suitable wheels it can be operated 16 hours out of the 24." There are about 1,620 lakes in Maine, a large number of which are near the sources of the rivers. The surface of the lakes and rivers constitutes nearly one-tenth of the whole area of the State. Moosehead Lake is the largest in the State. (For description of rivers, see separate articles).

**Geology.**—The nature of the geological formation of Maine shows that it belongs to one of the oldest parts of the United States. The marks of the Glacial period may be plainly traced in several parts of the State; the changes in extent and form of the river beds and lakes are shown by the rock formation of the vicinity and the nature of the deposits which were brought from the mountains to the valleys. The northern portion of the State belongs to the Devonian period and the region about Penobscot Bay to the Silurian. In the southern part of the State are fossiliferous clays. There are a number of low ridges which

evidently were once portions of mountain ranges, but which usually formed angles with the two great ranges that at one time extended across the State. Granite, slate and marble exist in large quantities.

**Soil.**—The soil of the State shows the effects of the Glacial period as much as the rocks; the greater part of the surface is till and various forms of glacial debris. The old lake bottoms, now dry land, are largely alluvial and in these places the soil is very fertile. In such localities there are extensive agricultural lands.

**Minerals and Mining.**—Granite is one of the most important wealth producing minerals of the State. Along the coast and inland for some distance there are large areas of granite outcrop. It is found in such quantities near tide water that quarrying and shipping are comparatively easy and inexpensive. The feldspar and quartz are easily separated. Hallowell, Dix Island, Vinal Haven and Freeport furnish the largest quantity. The capitol at Albany, N. Y., and the Metropolitan Museum of Art, New York City, are built of granite from Hallowell. Crystalline limestone and marble are found in several places; in the southwestern part of the State the deposits are quite extensive. Slate of good quality is found in the central part of the State. It is quarried for table tops, blackboards, roofing and for mantels. The slate from Piscataquis County is remarkably pure, capable of being split into thin plates, and in color a deep blue-black. Silica and feldspar of an excellent quality are found in several places. Some of the products made in whole or in part from silica and feldspar are glass, porcelain, scouring soap, sandpaper, earthenware and woodfiller. The silica is found in vein-quartz in some of the crystalline rocks. Tourmalin is found in Oxford County in large and beautiful crystals. Some of the other minerals are iron, copper, zinc, arsenic, manganese, tin, silver, gold, antimony, pyrites and beryl. The value of all the minerals produced in Maine in 1938, according to the United States Bureau of Mines, was \$3,548,638, as compared with \$4,129,391 in 1937. Clay products were valued at \$210,814 in 1938. The stone production in 1938 was valued at \$1,161,535, against \$1,546,037 in 1937. Sand and gravel in 1938 totaled 3,802,704 short tons valued at \$968,766.

There are in the State nearly 30 mineral springs which are known and used; 10 of them are in Androscoggin County. The State reports about 30 springs with an output of about 1,850,000 gallons. The most noted of these is the Poland spring situated in the town of that name.

**Climate.**—The climate is cold a considerable part of the year, snow covers the ground from three to five months. The summers are short; in the southern part of the State there is not more, usually less, than five months for the maturing of crops. The extensive forests have been a protection, and with the good river drainage and the sea breezes have tended to make the climate most healthful. A fair average of the mean temperature in January is 15° F.; in May 52°; in July 68°; in October 51°; in December 22°. The average temperature in the whole State is in summer about 62.5° F. and in winter 20° F.

**Flora.**—The trees and plants common to the northeastern part of the United States flourish



here. In the southern part are fine grasses, hardy fruits and a varied shrubbery. The strawberry, blackberry, raspberry, blueberry, thorn-apple and gooseberry grow in all parts of the State. (See *Forests and Agriculture*).

**Fauna.**—Maine has a large number and variety of animals, among which are bear, caribou, deer, moose, fox, beaver, sable, marten, mink, weasel, squirrel, rabbit, porcupine and wildcat. Wild geese, duck, teal; plover, gulls and various other sea fowl are found about its lakes and sea coasts; partridges, robins, bobolinks, orioles and other birds belonging to the north temperate zone are common. The waters of Maine abound with fish in great variety. (See section *Fisheries*).

**Forests.**—Maine is known as the "Pine Tree State" because of the large extent of pine forests which once existed within its limits. The majestic "mast pine," which the State once furnished for many ships, has almost become a thing of the past, yielding to the demands of commerce. The greatest part of the State is covered with forests; about 65 per cent of the State's land area is woodland. The northern and central parts are forest; in the southern part along the coast and along the navigable streams the land is cleared and cultivated. Trees grow rapidly. Denuded tracts, unless cultivated soon, send up an undergrowth of seedlings which become trees of fair size in the course of a few years. Most of the lumber of Maine used in the manufacture of pulp and paper has been taken from the drainage of the Androscoggin, Kennebec and Penobscot rivers, in about the following proportions: 42 per cent from the Androscoggin; 25 per cent from the Kennebec and 33 per cent from the Penobscot. The total area from which the whole pulp lumber consumed in the State has been taken has been estimated at 4,741,000 acres, leaving more than one-half the entire region from which no pulp wood of any consequence has ever been removed. There has been estimated standing 21,239,000,000 feet of spruce alone, besides an almost equal quantity comprising pine, cedar, hemlock, poplar and various species of hard wood. The annual growth is considered sufficient to warrant the cutting of 600,000,000 feet of spruce timber each year, without depleting the supply. The forest commissioner states that it is safe to reckon that there will be from 11,000,000 to 12,000,000 acres of land in the State that will be lumber producing for all time. There are now being taken annually upwards of 30,000,000 feet of white birch from Maine forests. The white birch area is a wide belt extending entirely across the State. Though used for many purposes its greatest utilization is by spool factories which produce about 800,000,000 spools, valued at more than \$1,000,000. Besides being used in the production of spools a large quantity is shipped to Europe in spool bars. A variety of small articles are also manufactured from it, as baskets, furniture, office equipments, etc. The science of forestry is being employed extensively in the preservation of timber by private corporations.

**Fisheries.**—The rivers and lakes are well stocked with fish; the State is considered the sportsman's paradise. Some of the varieties are the speckled trout, sturgeon, pickerel, salmon, bass and bream. Lobsters, clams and mussels are in large quantities along the coast, and

in the bays and inlets are bluefish, rock-cod, sculpins, cunners, flounders and others. In the off-shore waters there are cod, herring, mackerel, haddock, hake, porgy, menhaden and pollock, which are caught in large quantities. One species of herring, the *Clupea harengus*, furnishes a large portion of the fish used in the sardine-canning establishments of Lubec, Eastport and other places. The fisheries of Maine rank second in value among the fisheries of New England, but more men are engaged in this industry in Maine than in any other New England State except Massachusetts. The commissioner of sea and shore fisheries estimates the number of persons dependent upon the fisheries at 50,000 and the value of the product at \$5,786,000; 1935, \$3,856,000.

In 1892 the lobster fisheries product was \$992,855, this amount being greater than for all lobsters in all the other New England States. The law passed in 1895 for the protection of the lobster fisheries greatly curtailed this branch of the fishing industry, as it prohibited the taking of lobsters less than 10½ inches in extreme length. This caused the removal of canning establishments to Nova Scotia, New Brunswick and the Magdalen Islands. The government experiment stations plant large quantities of lobster fry along the coast. The value of the catch averages annually about \$3,500,000. Clam fishing ranks next in importance; canning clams is a prominent industry, also the preparation of smoked herring. Salmon fishing is largely in the Penobscot and Kennebec rivers. The fishery trade is centred chiefly at Portland, Rockland and Vinal Haven. The sardine fisheries are located in Washington, Hancock, Lincoln and Cumberland counties. The word "sardine" refers to young herring which are caught off the coast of Maine in great abundance and canned. Maine is the second State in this industry, its product being exceeded only by that of California. The value of the sardine industry amounts to about \$1,500,000 annually.

**Agriculture and Stock Raising.**—The soil of a considerable portion of the State is not adapted to agriculture, owing to the large acreage of forest land. But a little over 33 per cent is farm land and of that nearly one-third is not improved. The most fertile lands are in the river valleys, the largest acreage being in the northeastern part of the State in the Aroostook Basin. The farms average in size about 108.3 acres, and about 5 per cent of the farms are occupied by tenants (Government Census Bulletin for 1 April 1940). The owner living on the farm means more intensive methods of cultivation, a systematic enrichment of the soil and a careful rotation of crops. The cereal crops, especially wheat, have decreased in extent owing to Western competition, but in Aroostook County they are increasing. The Federal census of 1940 shows that in this county the cereals occupied three-fourths the total of the cereal acreage of the State. The crop of oats, once large, has also decreased; yellow corn, formerly cultivated on all the farms, never occupied much area and is now raised principally for fodder. The finest sweet corn in the world is raised in Maine for canning and goes to all parts of the country.

The green-corn industry originated with Isaac Winslow who invented the process in 1838-39. On 8 March 1853 he applied for a

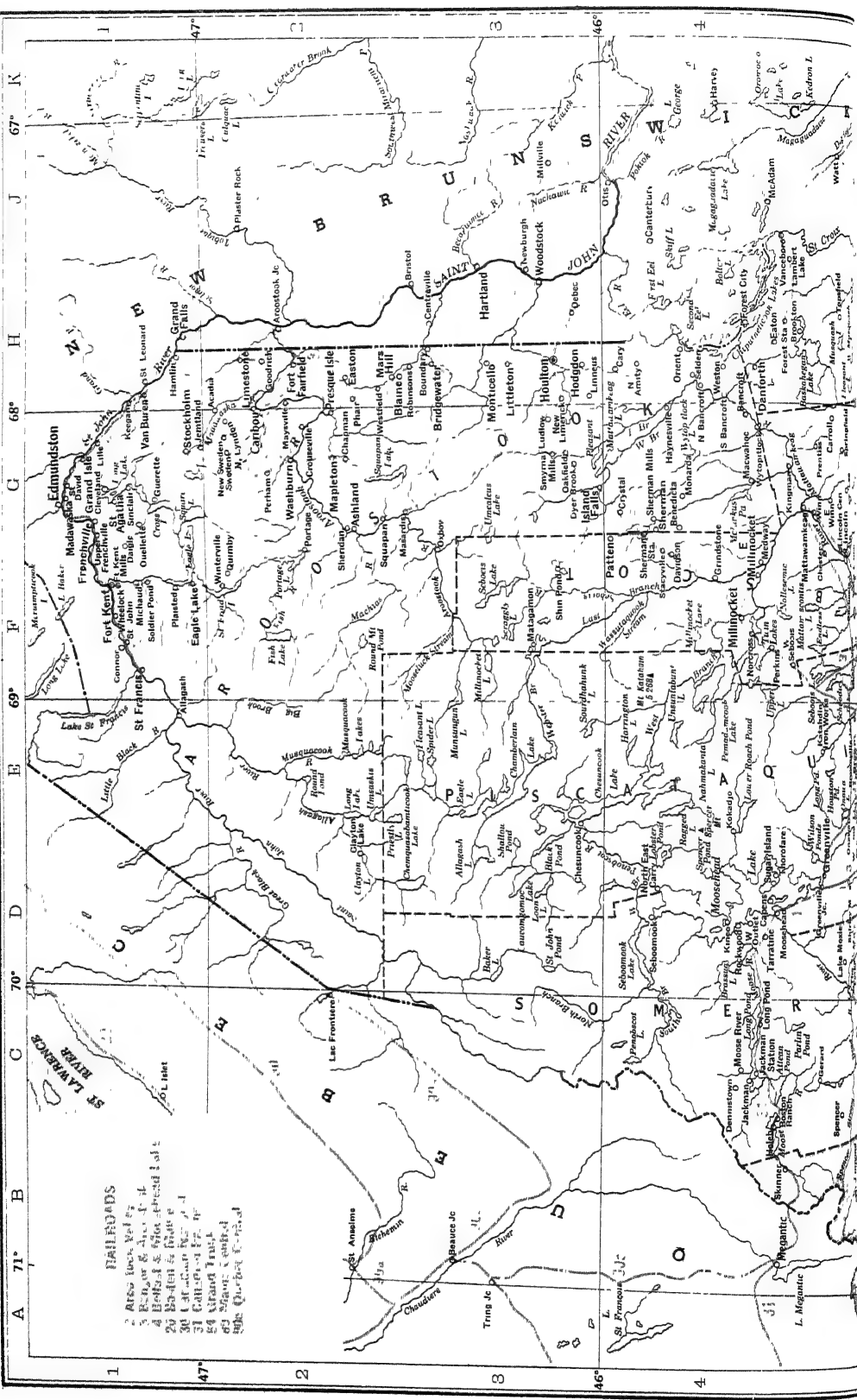
# MAINE

Total Population 847,226

Andover, (F5)	463	Back Cove, (F6)	1,413	Dennistown, (C4)	48	Eastport, (F1)	2,501	Greenland, (F5)	
Auburn, (F2)		Barnettville, (E7)	113	Dennistown, (J6)	424	Eastport, (F1)		Greenland, (F5)	387
Ayer, (F6)	302	Barnstable, (G5)	488	Derry, (F5)		Eastport, (F1)		Greenland, (F5)	
Ayer, (F6)	805	Barnstable, (E6)	643	Detroit, (E6)	466	Eastport, (F1)	562	Greenland, (F5)	
Ayer, (F6)	274	Barnstable, (B8)	1,708	Dexter, (E5)	245	Eastport, (F1)	742	Greenland, (F5)	2,193
Ayer, (F6)	292	Barnstable, (B6)	123	Dixfield, (H6)	1,268	Eastport, (F1)	492	Greenland, (F5)	
Ayer, (F6)	617	Barnstable, (J5)	5,161	Dixfield, (E6)	576	Eastport, (F1)	1,187	Greenland, (F5)	
Ayer, (F6)	644	Barnstable, (L5)	310	Dixfield, (H6)		Eastport, (F1)	1,187	Greenland, (F5)	
Ayer, (F6)	349	Barnstable, (F7)	3,133	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	
Ayer, (F6)	286	Barnstable, (D6)	717	Dover-Foxcroft, (E5)	2,022	Eastport, (F1)	1,187	Greenland, (F5)	1,134
Ayer, (F6)	146	Barnstable, (C7)	706	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	256
Ayer, (F6)	757	Barnstable, (B9)	209	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	956
Ayer, (F6)	824	Barnstable, (D4)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	4
Ayer, (F6)	641	Barnstable, (C9)	314	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	712
Ayer, (F6)	128	Barnstable, (C5)	133	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	367
Ayer, (F6)	554	Barnstable, (F5)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	63
Ayer, (F6)	98	Barnstable, (G2)	5,193	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	2,516
Ayer, (F6)	742	Barnstable, (E6)	870	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	955
Ayer, (F6)	312	Barnstable, (F5)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	471
Ayer, (F6)	145	Barnstable, (G5)	304	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	17
Ayer, (F6)	19,817	Barnstable, (C5)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	508
Ayer, (F6)	19,360	Barnstable, (C6)	281	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	70
Ayer, (F6)	81	Barnstable, (H4)	287	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	
Ayer, (F6)	362	Barnstable, (B7)	890	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	454
Ayer, (F6)	210	Barnstable, (E7)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	1,452
Ayer, (F6)	29,822	Barnstable, (B7)	236	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	618
Ayer, (F6)	3,032	Barnstable, (E7)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	801
Ayer, (F6)	190	Barnstable, (E7)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	106
Ayer, (F6)	388	Barnstable, (H6)	86	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	661
Ayer, (F6)	10,235	Barnstable, (G2)	397	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	38,598
Ayer, (F6)	36	Barnstable, (F5)	768	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	499
Ayer, (F6)	108	Barnstable, (J5)	292	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	496
Ayer, (F6)	513	Barnstable, (C8)	238	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	1,080
Ayer, (F6)	31	Barnstable, (D7)	2,280	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	864
Ayer, (F6)	5,540	Barnstable, (H6)	1,046	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	864
Ayer, (F6)	1,046	Barnstable, (F5)	258	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	2,479
Ayer, (F6)		Barnstable, (C6)	538	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	367
Ayer, (F6)	213	Barnstable, (D3)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	892
Ayer, (F6)	264	Barnstable, (E7)	1,252	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	
Ayer, (F6)	1,290	Barnstable, (C7)	1,305	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	775
Ayer, (F6)		Barnstable, (E8)	245	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	4,123
Ayer, (F6)	1,017	Barnstable, (E2)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	266
Ayer, (F6)	905	Barnstable, (C8)	112	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	2,209
Ayer, (F6)	19,790	Barnstable, (G6)	168	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	722
Ayer, (F6)	83	Barnstable, (D6)	531	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	1,049
Ayer, (F6)	917	Barnstable, (H6)	399	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	1,302
Ayer, (F6)	122	Barnstable, (H6)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	2,617
Ayer, (F6)	1,049	Barnstable, (H6)	178	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	152
Ayer, (F6)	118	Barnstable, (E7)	778	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	300
Ayer, (F6)	1,343	Barnstable, (H7)	190	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	
Ayer, (F6)	75	Barnstable, (E6)	629	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	51
Ayer, (F6)	1,370	Barnstable, (B8)	528	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	
Ayer, (F6)		Barnstable, (D6)	626	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	
Ayer, (F6)	1,407	Barnstable, (F5)	214	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	
Ayer, (F6)		Barnstable, (C6)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	
Ayer, (F6)		Barnstable, (C7)	334	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	647
Ayer, (F6)	915	Barnstable, (H5)	136	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	161
Ayer, (F6)	49	Barnstable, (C7)	235	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	1,636
Ayer, (F6)		Barnstable, (G2)	320	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	343
Ayer, (F6)	734	Barnstable, (G4)	346	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	1,411
Ayer, (F6)		Barnstable, (C8)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	818
Ayer, (F6)	506	Barnstable, (C8)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	273
Ayer, (F6)	383	Barnstable, (C8)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	242
Ayer, (F6)	6,510	Barnstable, (C8)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	2,184
Ayer, (F6)		Barnstable, (C7)	151	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	2,581
Ayer, (F6)	1,636	Barnstable, (E7)	362	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	214
Ayer, (F6)	183	Barnstable, (J6)	481	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	
Ayer, (F6)	1,355	Barnstable, (G1)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	84
Ayer, (F6)	656	Barnstable, (E7)	667	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	626
Ayer, (F6)	744	Barnstable, (H4)	813	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	1,354
Ayer, (F6)	805	Barnstable, (C7)	230	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	
Ayer, (F6)	273	Barnstable, (F7)	210	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	1,157
Ayer, (F6)	741	Barnstable, (F4)		Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	601
Ayer, (F6)	1,914	Barnstable, (B8)	454	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	
Ayer, (F6)	1,131	Barnstable, (C5)	76	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	
Ayer, (F6)	7,003	Barnstable, (H6)	55	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	1,622
Ayer, (F6)	489	Barnstable, (F6)	293	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	101
Ayer, (F6)	903	Barnstable, (F7)	1,303	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	213
Ayer, (F6)	115	Barnstable, (B8)	532	Dover-Foxcroft, (E5)		Eastport, (F1)	1,187	Greenland, (F5)	

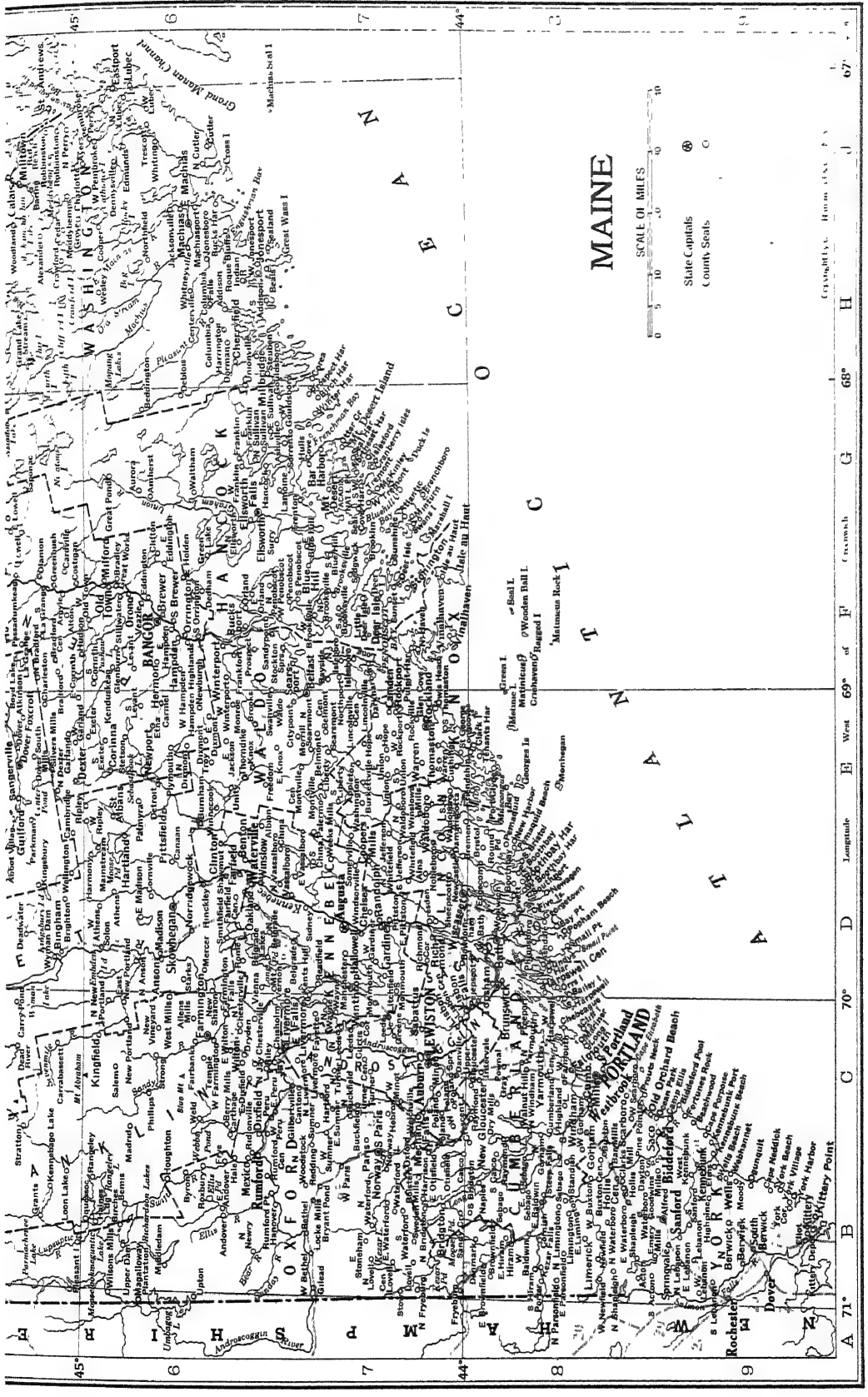
□ Population of Township.

● County seat.

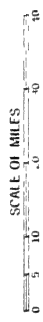


**RAILROADS**

- 1. Atles, locs. 1st & 2nd
- 2. E. & W. R. R. 1st & 2nd
- 3. B. & N. R. 1st & 2nd
- 4. B. & N. R. 1st & 2nd
- 5. B. & N. R. 1st & 2nd
- 6. B. & N. R. 1st & 2nd
- 7. B. & N. R. 1st & 2nd
- 8. B. & N. R. 1st & 2nd
- 9. B. & N. R. 1st & 2nd
- 10. B. & N. R. 1st & 2nd
- 11. B. & N. R. 1st & 2nd
- 12. B. & N. R. 1st & 2nd
- 13. B. & N. R. 1st & 2nd
- 14. B. & N. R. 1st & 2nd
- 15. B. & N. R. 1st & 2nd
- 16. B. & N. R. 1st & 2nd
- 17. B. & N. R. 1st & 2nd
- 18. B. & N. R. 1st & 2nd
- 19. B. & N. R. 1st & 2nd
- 20. B. & N. R. 1st & 2nd
- 21. B. & N. R. 1st & 2nd
- 22. B. & N. R. 1st & 2nd
- 23. B. & N. R. 1st & 2nd
- 24. B. & N. R. 1st & 2nd
- 25. B. & N. R. 1st & 2nd
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- 44. B. & N. R. 1st & 2nd
- 45. B. & N. R. 1st & 2nd
- 46. B. & N. R. 1st & 2nd
- 47. B. & N. R. 1st & 2nd
- 48. B. & N. R. 1st & 2nd
- 49. B. & N. R. 1st & 2nd
- 50. B. & N. R. 1st & 2nd



# MAINE



- State Capitals
- County Seats

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# MAINE

Total Population 847,912

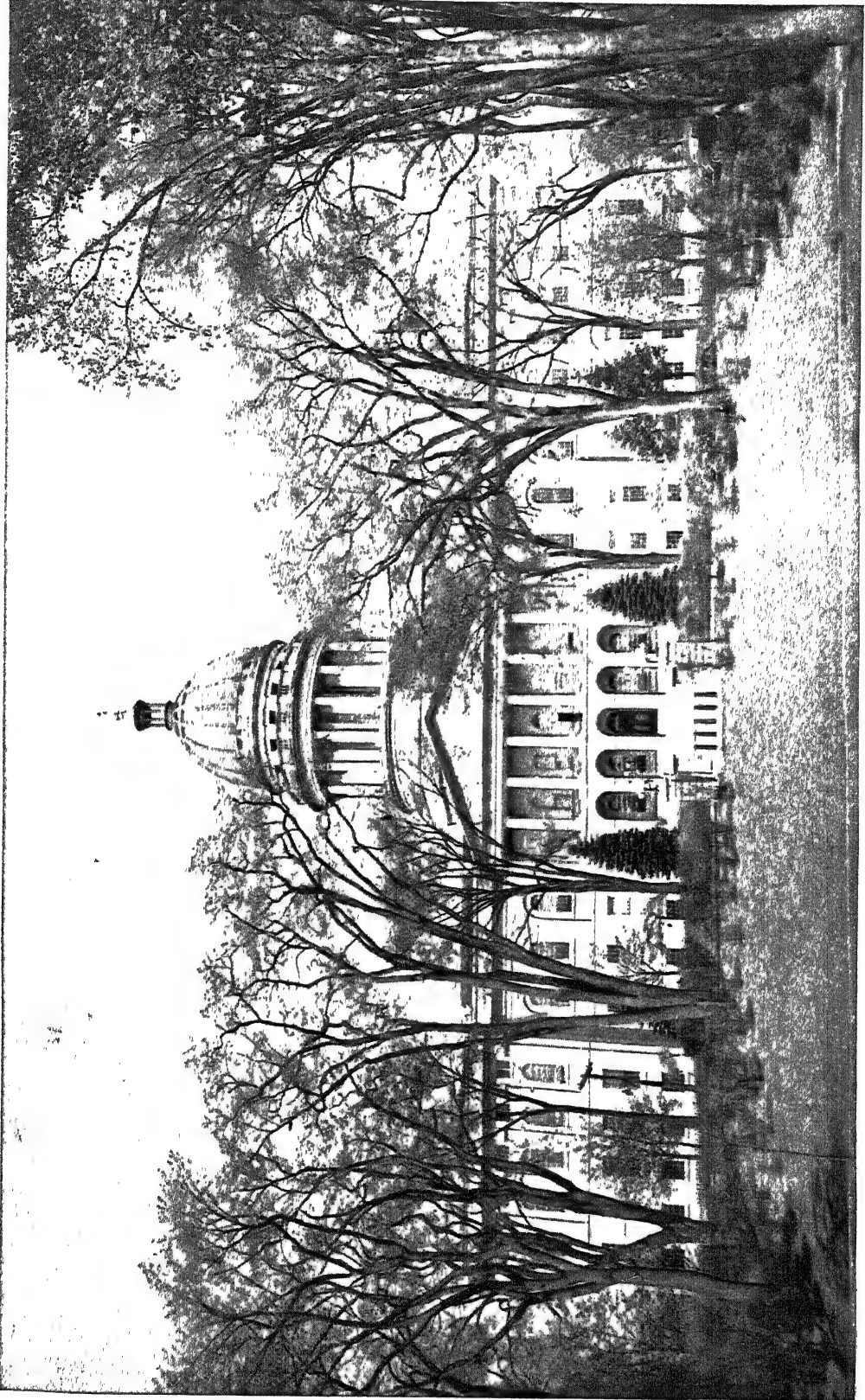
Medway, (G4)	623	Waterboro, (B8)		Riley, (C6)		S Lincoln, (G5)		Walnut Hill, (C8)	
Mercer, (D6)	381	Waterford, (B7)	278	Ripley, (E5)	324	S Monmouth, (D7)		Waltham, (C6)	
Mexico, (E6)	3,790	Wayne, (C7)	153	Robinsons, (H3)	200	S Orrington, (F6)	356	Warren, (E7)	
Mitchell, (F1)		Whitefield, (D7)		Rockland, (E7)	8,899	S Paris, (C7)	2,191	Washburn, (C2)	
Milford, (F6)	886	Windham, (C8)	297	Rockport, (F7)	964	S Penobscot, (F7)	347	Washington, (E7)	
Millbridge, (H6)	621	Yarmouth, (C8)		Rockwood, (D4)	317	Southport, (D8)	405	Waterboro, (B8)	
Millinocket, (F4)	5,964	Norway, (B7)	2,733	Rome, (D6)	418	S Portland, (C8)	15,781	Waterford, (B7)	
Milltown, (J5)		Norway Lake, (B7)		Rogue Bluffs, (H6)		S Robbinston, (J5)		Waterville, (E6)	
Milo, (F5)	3,000	Oakfield, (G3)	667	Round Pond, (E8)	543	S Sanford, (B9)		Wayne, (D7)	
Mine, (C7)	674	Oakland, (D6)	1,586	Roxbury, (B6)	346	S Thomaston, (E7)		Webbham, (C9)	
Minturn, (G7)	237	Ocean Park, (C9)		Rumford, (B6)	8,447	S Union, (E7)	241	Weeks Mills, (E7)	
Monanda, (G4)		Ogunquit, (B9)	615	Rumford Center		S Waldoboro, (E7)		Welchville, (C7)	
Monhegan, (E8)	115	Olamon, (F5)	225	(B7)		S Warren, (E7)		Weld, (C6)	
Monmouth, (D7)	1,500	Old Orchard Beach, (C9)	2,149	Rumford Pt., (B6)	125	S Waterford, (B7)	271	Wellington, (D5)	
Monroe, (E6)	665	Old Town, (F6)	7,688	Sabattus, (C7)	1,161	South West Harbor, (G7)		Wells, (B9)	
Monsie, (E5)	563	Onawa, (E5)	57	Saco, (C9)	8,631	S Windham, (C8)	817	Wells Beach, (C9)	
Monticello, (H3)	1,504	Oquossoc, (B6)	117	Saint Agatha, (G1)		Spencer, (C5)		Wesley, (H6)	
Montville, (E7)	605	Orient, (H4)	147	St Albans, (E6)	950	Springfield, (G5)	442	West Athens, (D6)	
Moose, (B9)		Oroquois, (F6)	1,015	St David, (G1)	751	Springvale, (B9)	2,899	W Baldwin, (B8)	
Moushead, (D4)	15	Oroquois, (F6)	3,052	St Francis, (E1)	1,489	Squapan, (C2)		W Bath, (D8)	
Moose River, (C4)	207	Orrington, (F6)	1,517	St George, (E7)	1,550	Standish, (B8)	717	W Bethel, (B7)	
Merrill, (E7)	328	Orris Island, (D8)	121	St John, (F1)	628	Standish, (B8)	1,472	Harbor, (D8)	
Mt Desert, (G7)	2,047	Otisfield, (B7)	488	Salem, (C6)	78	Starks, (D6)	426	Westbrook, (C8)	
Mt Vernon, (D7)	653	Ouellette, (G1)	157	Sandy Creek, (B7)		Steeple Falls, (B8)	551	W Brooksville, (F7)	
Naples, (B8)	676	Ouette, (G1)		Sandypoint, (F7)	257	Stetson, (E6)	408	W Buxton, (B8)	
Newagen, (D8)	95	Owl Head, (F7)	609	Sanford, (B9)	10,765	Stauben, (H6)	690	W Enfield, (F5)	
Newburgh, (F6)	591	Oxbow, (G3)	178	Sangerville, (E5)	660	Stillwater, (F6)	656	W Farmington, (C6)	
Newcastle, (D7)	994	Oxford, (C7)	619	Saponac, (G5)		Stockholm, (G1)	622	Westfield, (C2)	
Newfield, (B8)	475	Palmer, (E7)	527	Scarboro, (C8)	2,842	Stockton Spgs., (F7)		W Franklin, (G6)	
New Gloucester, (C8)		Palmyra, (E6)	934	Seal Cove, (G7)	487	Stonington, (F7)	714	W Gardiner, (D7)	
New Harbor, (E8)	447	Paris, (B7)	4,094	Seal Harbor, (G7)	251	Stow, (A7)	153	W Gouldsboro, (G1)	
New Limerick, (G3)		Parkman, (D5)	581	Searsmont, (E7)	542	Stratton, (C5)	553	W Jonesport, (H6)	
Newport, (E6)	1,370	Passajunkag, (F5)		Searsport, (F7)	698	Strong, (C6)	597	W Kennebunk, (B9)	
New Portland, (C6)		Patten, (F4)	1,007	Seabago, (B8)	518	Sugar Island, (D4)		W Lebanon, (B9)	
New Sharon, (C)	761	Pejepscot, (D8)	453	Sebec, (E5)	372	Sullivan, (C7)	801	W Lubec, (J6)	
New Sweden, (G2)	844	Pemaquid, (E8)	289	Sebec Lake, (E5)		Summer, (G6)	541	West Mills, (C6)	
New Vineyard, (C6)		Pemaquid Beach, (E8)		Sebec Station, (E5)	146	Sunset, (F7)	257	W Minot, (C7)	
Nobleboro, (D7)	665	Pembroke, (J6)	1,029	Seboeis, (F5)	80	Sunshine, (G7)		W Newfield, (B8)	
Norcross, (F4)		Penobscot, (F7)	680	Seboomook, (D4)		Surry, (F7)	497	West Old Town, (F6)	
Norridgewock, (D6)	616	Perham, (G2)	689	Sedgwick, (F7)	718	Swans Island, (G7)	425	Weston, (H4)	
North Amity, (H4)		Perkins, (F4)		Selden, (H4)		Swanville, (E6)	373	W Outler, (D4)	
North Anson, (D6)	576	Perry, (J6)	713	Shapleigh, (B8)	290	Sweden, (B7)	225	W Paris, (B7)	
North Bancroft, (G4)		Peru, (C6)	965	Shawmut, (D6)		Sweden, (G2)		W Pembroke, (J6)	
North Belgrade, (D7)	157	Phair, (G2)		Sheepscott, (D7)		Tarratine, (D4)	11	W Penobscot, (F7)	
North Berwick, (B9)	969	Phillips, (C6)	782	Sheridan, (F2)	551	Temple, (C6)	252	W Peru, (C7)	
North Bradford, (F5)		Phippsburg, (D8)	1,020	Sherman, (G4)	1,058	Tenants Harbor, (E8)		W Poland, (C7)	
North Bridgton, (B7)	353	Pittsfield, (E6)	2,578	Sherman Mills, (G4)	843	The Forks, (D5)	123	W Rockport, (E7)	
North Brookville, (F7)		Pittsboro, (D7)	1,114	Sherman Station, (F4)		Thomaston, (E7)	1,569	W Scarborough, (C8)	
North Buckfield, (C7)		Plaisted, (F1)	17	Shin Pond, (F3)		Thorncliffe, (E6)	478	W Seboeis, (F4)	
North Custer, (J6)		Pleasant Island, (B5)		Shirley Mills, (D5)	237	Thorofare, (D4)		W Sumner, (C7)	
North Dexter, (E5)		Pleasant Pond, (D5)		Sidney, (D7)	989	Topfield, (H5)	221	W Tremont, (G7)	
North Dixmont, (E6)		Plymouth, (E6)	462	Sinclair, (G1)	54	Topsham, (D8)	1,189	W Winterport, (E6)	
North East Carry, (D4)		Poland, (C7)	1,441	Skowhegan, (D6)	5,606	Tremont, (G7)	1,118	Wheelock, (F1)	
Northeast Harbor, (G7)	675	Poland Spring, (C7)	162	Small Point, (D8)		Trenton, (G7)	403	Whitefield, (D7)	
North Ellsworth, (G6)		Popham Beach, (D8)		Smithfield, (D6)	353	Trescott, (J6)	395	Whiting, (J6)	
Northfield, (H6)	57	Portage, (G2)		Smyrna Mills, (G3)	437	Trevett, (D8)	238	Whitneyville, (H6)	
North Fryeburg, (B7)		Port Clyde, (E8)	312	Soldier Pond, (F1)		Troutdale, (D5)		Willimantic, (E5)	
North Gorham, (C8)		Porter, (B8)	892	Solon, (D6)	773	Troy, (E6)	582	Wilton, (C6)	
North Haven, (F7)	460	Pownal, (C8)	73,643	Somerville, (D7)	266	Turner, (C7)	1,415	Windsorville, (D7)	
North Islesboro, (F7)		Prentiss, (G5)	337	Sorrento, (G7)	188	Turner Center, (C7)	191	Winn, (G5)	
North Jay, (C6)	665	Presque Isle, (H2)	5,456	S Bancroft, (G4)		Union, (E7)	1,150	Winnecook, (E6)	
North Leeds, (C7)	279	Princeton, (H5)	1,009	S Berwick, (B9)	1,830	Unionville, (H6)	149	Winslow, (D6)	
North Limington, (B8)		Prospect, (F6)	430	S Blue Hill, (F7)		Unity, (E6)	935	Winslows Mills, (E7)	
North Livermore, (C7)	175	Prout's Neck, (C9)	59	S Brewer, (F6)		Upper Dam, (B6)	8	Winter Harbor, (C1)	
North Lovell, (B7)	84	Pulpit Harbor, (F7)		S Bridgton, (B8)	298	Upper Frenchville, (G1)		Winterport, (F6)	
North Lubec, (J6)	564	Quimby, (F2)		S Bristol, (D8)	582	Upper Gloucester, (C8)		Winterville, (F2)	
North Lyndon, (G2)		Randolph, (D7)	1,501	S Brooksville, (F7)		Upton, (B6)	174	Winthrop, (C7)	
North New Portland, (C6)		Rangleve, (B6)	974	S Casco, (B8)	89	Van Buren, (G1)	3,570	Wiscasset, (D7)	
North Newry, (B6)		Raymond, (B8)	506	S China, (D7)	336	Vanceboro, (H4)	612	Woodland, (H5)	
North Penobscot, (F7)	97	Readfield, (D7)	986	S Corinth, (F6)		Vassalboro, (D7)	1,931	Woodstock, (B7)	
North Portland, (E7)	485	Richmond, (D7)	1,398	S Deer Isle, (F7)		Vienna, (D6)	301	Woolwich, (D8)	
North Raymond, (C8)	116	Richmond Corner, (D7)		S Dexter, (E6)		Vinalhaven, (F7)	1,085	Wyman Dam, (D5)	
North Shapleigh, (B8)	196	Ridgelyville, (C6)	347	S Harpswell, (C8)	241	Waite, (H5)	152	Wytopituck, (C4)	
North Sullivan, (G6)	276			S Hiram, (B8)	213	Waldo, (E7)	340	Yarmouth, (C8)	
North Turner, (C7)	200			S Hollis, (B8)		Waldoboro, (E7)	833	York Beach, (B9)	
North Vassalboro, (D7)				S Hope, (E7)	273			York Corners, (B9)	
North Waldoboro, (E7)								York Harbor, (B9)	
								York Village, (B9)	

□ Population of Township.

● County seat.



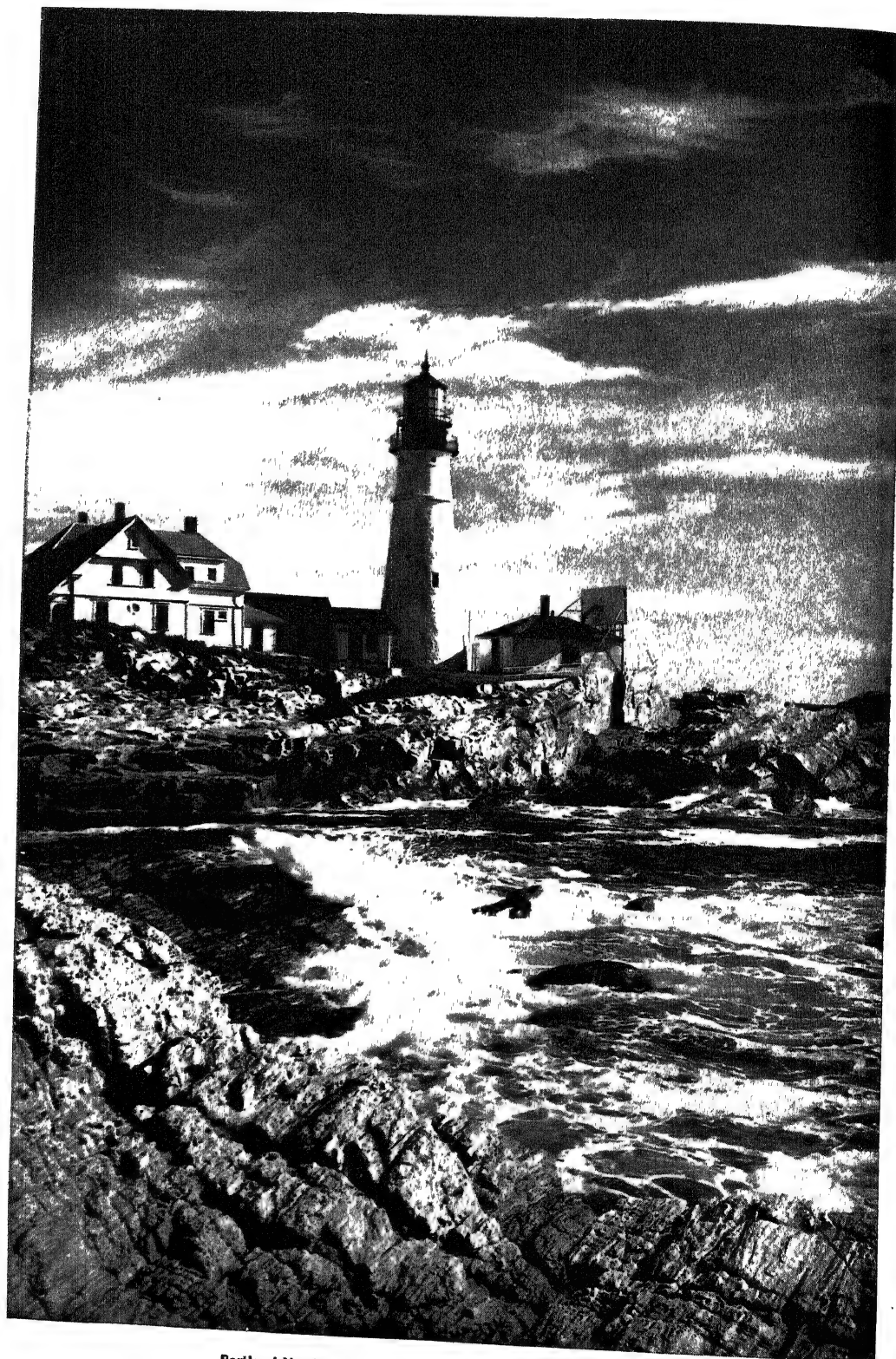
# MAINE



The State House in Augusta.

Courtesy, Maine Development Commission

# MAINE



Portland Head Light, at the harbor entrance, Portland, Maine.

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patent for preserving fresh green corn by hermetically sealing process. In suits against infringers of the patents it appeared that the canning of corn originated in Maine at the early dates mentioned.

Buckwheat, which produces excellent flour in a soil and climate like Maine, is still cultivated. The returns from the potato crop are greater than from all the cereals. Hay of an excellent quality is marketed at good prices. Farmers living near markets are giving considerable attention to market gardening and dairying. Fine grained vegetables, sweet corn, small fruits and apples flourish and bring excellent returns. Apple orchards are increasing in number and increased attention is being given to their care and cultivation. The raising of horses is increasing, but the number of meat cattle and sheep is decreasing. The number of milch cows is increasing.

The Federal Census reports for 1940 gave the following statistics:

Item	Census of 1940	Census of 1930
<b>FARMS, FARM ACREAGE AND VALUE</b>		
Number of farms . . . . .	38,980	39,006
Farms operated by—		
Full owners . . . . .	34,887	35,468
Part owners . . . . .	1,363	1,280
Managers . . . . .	211	503
All tenants . . . . .	2,519	1,755
Value of farms (land and buildings) . . . . .	\$124,082,841	\$194,279,884
Average value per farm . . . . .	\$3,183	\$4,981
Average value per acre . . . . .	\$29 38	\$41 87
All land in farms, acres . . . . .	4,223,297	4,639,938
Average acreage per farm . . . . .	108 3	119 0
<b>FARM LAND ACCORDING TO USE (ACRES)</b>		
Cropland harvested . . . . .	1,146,613	1,304,014
Crop failure . . . . .	14,898	6,445
Cropland, idle or fallow . . . . .	108,164	91,306
Plowable pasture . . . . .	319,687	259,265
Woodland . . . . .	1,783,327	2,240,910
All other land . . . . .	850,608	737,998
Land available for crops . . . . .	1,589,362	1,661,030
<b>LIVESTOCK ON FARMS (NUMBER)</b>		
Horses and colts . . . . .	37,464	60,827
Mules and mule colts . . . . .	187	516
Cattle . . . . .	215,833	224,121
Cows and heifers 2 years old and over on 1 Jan. of census year . . . . .	138,206	129,906
Cows and heifers milked . . . . .	123,448	131,426
Sheep and lambs . . . . .	38,517	76,438
Hogs and pigs . . . . .	34,780	34,166
Chickens . . . . .	1,542,092	1,451,035
<b>ACREAGE AND PRODUCTION OF SELECTED CROPS</b>		
Crop	1929-38 Average	1940
<b>Corn:</b>		
Acreage . . . . .	12,000	13,000
Production—bus. . . . .	481,000	507,000
<b>Oats:</b>		
Acreage . . . . .	117,000	113,000
Production—bus . . . . .	4,316,000	4,520,000
<b>Hay:</b>		
Acreage . . . . .	996,000	1,013,000
Production—tons . . . . .	868,000	884,000
<b>Potatoes:</b>		
Acreage . . . . .	168,000	165,000
Production—bus. . . . .	45,137,000	44,055,000
<b>Apples:</b>		
Production—bus. . . . .	567,000	752,000

**Population.**—On 1 April 1940, Maine had a population of 847,226, an increase of 49,803, or 6.2 per cent over its 1930 population of 797,423. The first census of Maine was taken in 1790 and returned a population of 96,540. The population

has increased with every census since that time, except that of 1870, passing 100,000 between 1790 and 1800, 200,000 between 1800 and 1810, 300,000 between 1820 and 1830, 500,000 between 1840 and 1850, 700,000 between 1900 and 1910, and 800,000 between 1930 and 1940. The 1940 population represents a density of 27.3 inhabitants per square mile. Twelve of the 16 counties gained in population between 1930 and 1940, York County, with an increase of 13.2 per cent, having had the most rapid growth. There are 10 cities with populations of 10,000 or more, one (Bath) having reached this size since 1930. The following table shows the population of Maine broken down into urban, rural, male, female, white and nonwhites.

#### POPULATION OF MAINE, 1930-40

	1930	1940
Maine . . . . .	797,423	847,226
Urban . . . . .	321,506	343,057
Rural . . . . .	475,917	504,169
Male . . . . .	401,285	427,393
Female . . . . .	396,138	419,833
White . . . . .	795,185	844,567
Nonwhite . . . . .	2,238	2,659

**New Sweden.**—In 1876 a Swedish colony consisting of 50 persons was located in the northern part of Aroostook County by the Hon. W. W. Thomas, Jr., Commissioner of the Immigration. That portion of Township No. 15 upon which they were located was named New Sweden. Its present number is about 1,000. It is estimated that there are now in Maine 5,000 Swedes, a large number being descendants of the Thomas colony. The success of the settlement, owing to the high character for thrift and industry of the colonists, has been very great.

**Manufactures.**—The extensive water power has been a great aid in developing manufacturing industries. Ship-building was among the first manufacturing industries of the State. The first vessel built in Maine was the *Virginia*. She was built by the Popham colony 1607-08, and under command of Capt James Davis sailed from Plymouth with the Somers and Gates colony for Jamestown, 1 June 1609. Bath was the chief ship-building center of the United States for over 100 years and is yet a ship-building center of importance. Prior to the construction of steel vessels, the Maine forests supplied a large amount of the timber used in ocean vessels built in the United States and nearly half the ocean vessels of the nation, up to 1900, were made in Maine. The manufacture of leather is another of the leading industries. The bark of the hemlock is used in large quantities for tanning. The manufacturing of cotton and woolen goods began the latter part of the 18th century and has been continued. Lewiston is the chief center of cotton manufacturing. Biddeford and Saco are extensively engaged in manufacturing cotton goods. Woolen mills are scattered throughout the State. The oil-cloth industry was first started in Maine in 1845 by C. M. Bailey of Winthrop. Nearly all the factories are located near the coast, or in localities where abundant water power and good transportation lessen the cost of production and shipping. Lime and cement are important manufacturing products; large quantities of lime are made in Knox County. In 1939 there were 1,210 manufacturing establishments in the State. These employed 75,655 wage earners and turned out

products valued at \$345,368,595. The wages paid were \$68,434,288.

**The Paper Industry.**—Samuel Waldo, Thomas Westbrook and Richard Fry were pioneers in the paper industry of Maine, having built a mill at Presumpscot Falls, Falmouth, in 1731, and a second mill at Stroudwater in 1733. At this time there were but three paper mills in the country, two being in Philadelphia and one in Milton, Mass. R. H. Gardiner and John Savels built the third mill about 1810. In 1816 Harris and Cox Brothers built a mill at North Yarmouth, and the same year another mill was built at Union by Josiah Day which was destroyed by fire in 1843. In 1823 George Cox and Company built a mill at Vassalboro which was burned in 1848 and not rebuilt. In 1845 Day and Lyon built a paper mill at «Con-gin» (now Cumberland Mills, Westbrook) which was burned in 1852, and was rebuilt by the firm of S. D. Warren and Company on the site of the old mill.

The paper industry in Maine received a great impetus by the introduction of wood pulp, and the State now ranks among the first of pulp-producing States. Wood pulp was first produced in this State in 1868-69. The second pulp mill was established in 1872 at Yarmouth. Sulphite pulp was first produced in Maine in 1889. Other sulphite, soda pulp and ground wood mills have followed in rapid succession since these dates.

There were in 1939, in Maine, 21 pulp and paper establishments in the State with an average of 3,048 wage earners, and an annual product valued at \$25,370,932. There were in 1939, 23 paper and paperboard mills which employed 7,773 wage earners and whose products aggregated \$69,278,265 in value. Woolen and worsted manufactures had 40 mills with a total of 8,786 wage earners and products valued at \$36,118,681. There is no coal and only a small amount of iron in the State and as a result the manufacturing industry is dependent upon water power. Fortunately the abundance of timber and the wonderful water power available have to a great extent overcome the handicap of lack of coal. The leading industries are paper and wood pulp manufacture; cotton goods; woolen goods; boots and shoes; lumber and timber products; canning and preserving fish; canning and preserving fruits and vegetables; and foundry and machine shop products. Ship-building once so important now occupies a somewhat subordinate place.

**Banking Institutions.**—On 1 Jan. 1941 there were 59 insured commercial banks in the State. The total assets of these institutions was \$230,071,000, including cash balances of \$65,999,000; direct obligations of the United States government, \$38,163,000; obligations guaranteed by the United States government, \$12,017,000; securities, \$82,258,000; and loans, \$76,303,000. Liabilities included demand deposits, \$78,747,000; time deposits, \$110,873,000; capital stock, \$15,380,000; surplus, \$8,427,000; and undivided profits of \$4,766,000.

**Finances.**—The following information relating to Maine's finances for 1939-40 was supplied by the State treasurer's office:

Balance in Treasury at beginning of fiscal year 1939-40 .....	\$ 4,421,536 28
Receipts from all sources, 1939-40.....	45,811,164 04
Total .....	\$50,232,700 32
Disbursements, 1939-40 .....	45,622,565 29
Balance at beginning of fiscal year 1940-41.	\$ 4,610,135 03

On 30 June 1940 the bonded debt of the State totaled \$27,400,000. There was no floating debt. The assessed value of all property in the State was \$672,089,963, of which \$569,559,706 was real property and \$102,530,257 was personal property.

**Government.**—The State Constitution, under which the laws of the State are administered, was adopted by the people in town meetings held throughout the State, December 1819. To amend or change the constitution it is necessary to have in favor a two-thirds vote of both houses of the legislature and a majority of the votes cast at the next biennial election or meeting of the people. A voter must be a citizen of the State, that is, no one has the right of suffrage but persons, 21 years or over, citizens of the United States, who have resided in the State, county, town and voting district three months. Persons 21 years and over who are excluded from voting are paupers, Indians who are not taxed and persons under guardianship. Voters who are soldiers in the State militia or regular United States army may vote when serving outside of the State. In 1884 Maine, which had enacted the first prohibition law adopted by any State in the Union, wrote into its constitution an amendment prohibiting the manufacture and sale of intoxicating liquors. This law remained in effect until after the repeal of the 18th amendment to the Federal Constitution. The capital city is Augusta, on the Kennebec River in Kennebec County; its population (1940) was 19,360.

**Executive.**—A plurality of the votes cast is necessary for the election of the governor, who holds office for a term of two years. His council consists of seven members elected biennially on joint ballot of the legislature, but any district prescribed for the election of senators can furnish only one councillor. The governor and council have power to grant pardons, commutations and reprieves, and to remit penalties. They also have the appointment of the judges of the Supreme Court. In case of vacancy in the office of governor, the president of the senate and speaker of the house are respectively in line of succession. The secretary of State and the treasurer are elected on joint ballot of the legislature and for two years.

**Legislature.**—The legislature is composed of a senate and house of representatives. There are 33 members of the senate and 151 members of the house, all elected biennially on the second Monday in September. They meet in session on the first Wednesday in January next following their election. The senators are elected from senatorial districts into which the counties of the State are divided. The representatives are elected from towns. All bills relating to revenues must originate in the house of representatives. The house has power of impeachment; but the senate conducts the trials of impeachments. The legislature may overcome the governor's veto by a two-thirds vote each of house and senate. The State has three congressmen.

**Judiciary.**—The six judges who compose the Supreme Judicial Court are appointed for a term of seven years by the governor and council. The judge of the Superior Court of Cumberland County, which includes the city of Portland, the judges of the inferior courts, of municipal and police courts, are also appointed by the State executive and his council. The term of appointment of the judges of the inferior courts is seven years, and of the judges



of municipal and police courts, four years. Probate judges are chosen by the people by election and for a term of four years. The attorney-general is elected on joint ballot of the legislature for a term of two years.

**Education.**—Public elementary and secondary education is free to all residents of the State between the ages of 5 and 21 years and compulsory for all between the ages of 7 and 15 years. During the school year ending June 1939, there were 4,627 public elementary schools in the State employing 4,706 teachers and attended by 125,422 pupils. At the same time public secondary schools numbered 216. The latter employed 1,317 teachers and were attended by 39,066 pupils.

There is a school of education connected with the University of Maine at Orono and a department of education in Bates, Colby, and St. Joseph colleges. The State Normal School at Farmington offers four years of training in the field of home economics, leading to a degree of B.S. in Home Economics, and three years of training in the field of elementary teacher preparation. Western State Normal School at Gorham offers a four-year course leading to the degree of B.S. in elementary education and a four-year course in manual training, this, too, leading to a special degree in industrial arts. A junior high school teacher-training course is also offered in this institution. Aside from these two, the State has Washington State Normal School at Machias; Eastern State Normal School at Castine; and Aroostook State Normal School at Presque Isle. These three offer regular three-year teacher-training work. A sixth institution is known as Madawaska Training School and is located at Fort Kent.

There are several parochial schools in the State in which there are approximately 17,000 pupils enrolled. Maine has approximately 65 institutes and academies doing work on the secondary school level.

Institutions of the higher learning in the State, in addition to the University of Maine at Orono, include Bates College, a co-educational institution located at Lewiston; Bowdoin College (for men) located at Brunswick; Colby College, co-educational, at Waterville; Nason College (for women) at Springvale; St. Joseph's College (for women) in Portland; Bangor Theological Seminary (Congregational) and Northern Conservatory of Music, both located in Bangor. There are also four junior colleges—Ricker Junior College, Houlton; Westbrook Junior College, Portland; and Portland Junior College located in the same city; and Kent's Hill Junior College at Kent's Hill.

A public school fund was created in 1828. Certain parcels of land were set aside and money received for the sale of these lands; timber and grass taken therefrom formed the basis for a public permanent school fund. A three and a third mill tax on the valuation of the State, one-half of the tax on savings banks and trust companies, and the interest on the permanent school fund go to make up the resources for carrying on the public school program in Maine.

The compulsory school law which covers the ages from 7 to 15 is strictly enforced. The district school system has been abolished and the public school program comes under the jurisdiction of the municipality in which it is located.

Since 1901 the State, through its legislature,

has provided special aid for instruction in academies and institutes located within the State. Towns not maintaining a Class A secondary school must provide free tuition for pupils who are eligible for admission to high school.

Summer schools for elementary teachers are maintained by the State under the supervision of the commissioner of education. The colleges also make provisions for the training in academic and professional fields for teachers teaching in the secondary schools. Teachers' certificates are required and issued by the State department of education.

All school systems come under the immediate supervision of professional superintendents of schools who must meet high standards of preparation, both academic and professional, and pass rigid examinations before they can be certified. Several municipalities may join in the employment of the services of a single superintendent. The expense for this supervisory work is borne jointly by the municipalities and the State.

**Charitable and Penal Institutions.**—The following is a list of the State institutions coming within this classification: Augusta State Hospital, Augusta; Bangor State Hospital, Bangor; Pownall State School, Pownall; Central Maine Sanatorium, Fairfield; Northern Maine Sanatorium, Presque Isle; Western Maine Sanatorium, Hebron; Maine State Prison, Thomaston; State Reformatory for Women, Skowhegan; State Reformatory for Men, South Windham; State School for Girls, Hallowell; State School for Boys, South Portland; Maine School for the Deaf, Portland; and State Military and Naval Children's Home, Bath. In addition to the State institutions, there are hospitals at Portland, Augusta, Lewiston, and other cities.

**History.**—Maine is supposed to have been visited by the earliest explorers: Corte-Real in 1501 and Verrazano in 1524 reported a coast, the description of which corresponds with that of Maine. Gomez in 1525 sailed along the coast and named the Penobscot River, Rio de las Gamas, or Stag River. Sir John Hawkins, the famous Elizabethan seaman, explored the coast in 1565, and Sir Humphrey Gilbert in the voyage which cost his life was on his way to the Penobscot region, then known as Norumbega, to settle a colony under a patent from Elizabeth. Bartholomew Gosnold, an Englishman (one of the founders of Jamestown, Va.), explored the coast in 1602, and Maine was visited by Martin Pring, in 1603, by De Monts in 1604 and by Weymouth in 1605. The first attempt to settle on the territory was made by the French under De Monts, who, having received a patent from the French king, planted a small colony on Neutral Island in the Saint Croix River in 1604. The first colony settlement attempted by the English was at the mouth of the Sagadahoc by George Popham and Raleigh Gilbert in 1607. A fort was erected and a number of buildings and here the *Virginia*, the first vessel built in the country, was launched and subsequently formed one of the fleet of the Somers and Gates Colony in 1609. The colony at Sagadahoc was broken up by the death of Popham and great hardships endured by the colonists. They returned to England in the autumn of 1608. In 1613 French Jesuits established a mission on Mount Desert Island, but they were expelled by the English the next



year. In 1614 the coast was visited by John Smith, who found a few scattered settlers around Pemaquid Bay and on the island of Monhegan, off the coast of that part of the State now included in Lincoln County. In 1616 Sir Ferdinando Gorges, "The father of American Colonization," who had sent Pring and Popham to Maine, sent his agent, Richard Vines, to Saco to remain during the winter to explore the country and test the climate. In 1620 the king of Great Britain made a division of the grand charter of 1606 and granted to the Plymouth Company in England the whole country lying between 40° and 48° N., and to the Virginia Company the southern portion of the original patent. On 10 Aug 1622, Gorges received a patent of territory between the Merrimac and Kennebec rivers, and the next year sent his son Robert as governor and lieutenant-general of the country, accompanied by several councillors and a minister of the Church of England to establish worship. In 1629 another division of lands was made giving to Sir Ferdinando Gorges the country between the Piscataqua and Kennebec rivers, to which he gave the name of New Somersetshire, and the remainder to John Mason. The first court in the province was convened by William Gorges, nephew of Sir Ferdinando, at Saco, 21 March 1636. Charles I granted to Gorges in 1639 a charter under which in 1641 Gorges established the first chartered city in the United States, under the name of Gorgeana, and constituted it the capital of the province. What was then Gorgeana is now York. Its original name was Agamenticus. A fort was built here and efforts made to protect the people against the Indians. From 1630 to 1632 settlements were commenced in Saco, Biddeford, Scarborough, Cape Elizabeth and Portland, all of which continued to prosper till the Indian War of 1675, when they were overthrown. Massachusetts claimed a portion at least of the territory of Maine on the ground that its charter included the lands as far north as three miles above the source of the Merrimac; but those to whom other charters had been given resented her interference. In 1677 Massachusetts purchased from the heirs of Gorges all their interest in the province of Maine. A new charter, issued by William and Mary, in 1691, combined the provinces of Massachusetts, Plymouth, Acadia, Maine and Sagadahoc into one province, called "The Royal Province of Massachusetts Bay." Maine was now a part of Massachusetts. Remote from the centre of white settlements of any great size, Maine suffered from attacks by Indians, especially during the French and Indian wars. When King Philip's War was ended there were within its boundaries only five settlements.

Among the first soldiers in active service in the Revolutionary War were men from Maine, who fought as Massachusetts troops. A regiment from Maine was present at Bunker Hill. The British fleet, in 1775, attacked and destroyed Portland and Falmouth. Off Machias was fought the battle in which the *Margaretta*, a British ship, was captured. At the close of the war Massachusetts still retained possession of the country and called it the "District of Maine." The people of Maine were divided in their allegiance to Massachusetts; one party desired to remain a part of the "Bay State" and another party wanted independent statehood.

The separatist movement gained ground during the War of 1812. Maine was admitted into the Union as a State 15 March 1820.

The northeastern boundary continued a source of dissension with Great Britain, between the people of Maine and New Brunswick until after the ratification of the Ashburton Treaty (q v), which practically settled the eastern boundary between the United States and Canada.

The legislation of the State has been usually marked by conservatism and sound judgment. In 1851 Maine adopted a prohibitory liquor law which was afterward embodied in the constitution of the State. During the Civil War Maine furnished 70,107 soldiers, of whom 9,398 died during the war and a large number returned to their homes disabled invalids.

The State went Democratic at State elections (except 1840) till 1855, when Anson P. Morrill was elected governor as the candidate of the "Know-Nothing" party and also of those who favored a prohibitory law. From 1856 to 1910 the State has gone Republican except in 1878 and 1880, when the Democrats and Greenbacks on a fusion ticket elected their candidates. In 1879 a dispute arose as to the legality of the election of some of the members of the legislature and of the governor. For a time a disturbance was feared, but the militia preserved peace until the Supreme Judicial Court rendered a decision making the Republican candidates legal members of the legislature. This State has had no serious internal troubles except the "Know-Nothing" agitation in 1854-56, and the dispute about the legislature in 1879. In 1910, 1914 and 1933 the State went Democratic. In 1916, 1920, 1924, 1928, 1932, 1936 and 1940 it voted Republican.

Since Maine became a State there have been over 50 different governors, some of whom have held the office for more than one term.

#### LIST OF GOVERNORS.

William King	Democrat	1820-21
William D. Williamson		
(acting)*	"	1821
Benjamin Ames (acting)*	"	1821
Albion K. Parriss.	"	1822-27
Enoch Lincoln	"	1827-29
Joshua Hall (acting)†	"	1829-30
Nathan Cutler (acting)†	"	1829-30
Jonathan G. Hunton.	"	1830-31
Samuel E. Smith	"	1831-34
Robert P. Dunlap	"	1834-38
Edward Kent	Whig	1838-39
John Fairfield	Democrat	1839-40
Edward Kent	Whig	1840-41
John Fairfield	Democrat	1841-43
Edward Kavanah	"	1843-44
Hugh J. Anderson	"	1844-47
John W. Dana	"	1847-50
John Hubbard	"	1850-53
William G. Crosby	Whig and Free-Soil	1853-55
Anson P. Morrill	Republican	1855-56
Samuel Wells	Democrat	1856-57
Hannibal Hamlin	Republican	1857
Joseph H. Williams (acting)	"	1857-58
Lot M. Morrill	"	1858-60
Isaac Washburn, Jr.	"	1861-63
Abner Coburn	"	1863-64
Samuel Cony	"	1864-67
Joshua L. Chamberlain	"	1867-71
Sidney Perham	"	1871-74
Nelson Dingley, Jr.	"	1874-76
Selden Connor	"	1876-79
Alonzo Garcelon	Democrat-Greenback	1879-80
Daniel F. Davis	Republican	1880-81
Harris M. Plaisted	Democrat-Greenback	1881-83
Frederick Robie	Republican	1883-87
Joseph R. Bodwell	"	1887
Sebastian S. Marble (acting)	"	1887-89

Edwin C. Burleigh. . . .	Republican. . . .	1889-93
Henry B. Cleaves. . . .	" . . . .	1893-97
Llewellyn Powers. . . .	" . . . .	1897-1901
John F. Hill. . . .	" . . . .	1901-05
William T. Cobb. . . .	" . . . .	1905-09
Bert M. Fernald. . . .	" . . . .	1909-11
Frederick W. Plaisted. . . .	Democrat . . . .	1911-13
William T. Haines. . . .	Republican. . . .	1913-15
Oakley C. Curtis. . . .	Democrat . . . .	1915-17
Carl E. Miliken. . . .	Republican. . . .	1917-21
Frederick H. Parkhurst. . . .	" Died Jan. . . .	1921
Percival P. Baxter. . . .	" . . . .	1921-25
Ralph O. Brewster. . . .	" . . . .	1925-29
William T. Gardiner. . . .	" . . . .	1929-33
Louis J. Brann. . . .	Democrat . . . .	1933-37
Lewis O. Barrows. . . .	Republican. . . .	1937-41
Sumner Sewall. . . .	" . . . .	1941-
†Cutler and Joshua Hall, acting.		

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JAMES PHINNEY BAXTER.

**MAINE, France,** an old province having Normandy on the north, Brittany on the west and Anjou and Touraine on the south and Orléannais on the east. It corresponded to the modern departments of Sarthe and Mayenne. The ancient capital was Le Mans.

**MAINE, The.** A battleship of the United States navy, mysteriously destroyed by explosion in Havana Harbor, Cuba, on the night of 15 Feb 1898. The revolt of the Cubans in 1895 against Spanish misrule had brought the island in 1897-98 to the verge of ruin. General Weyler had been recalled and General Blanco was sent as governor-general to endeavor to bring order out of chaos, but his plans failed and January 1898 witnessed serious disturbances. The American government, believing the lives and property of American citizens in Havana in danger, the *Maine*, which had been for some time at Key West, was ordered to Havana and arrived at that port 24 Jan 1898. She was piloted into the harbor by an official pilot of the Spanish government and was moored to a government buoy. The usual official and international calls and salutations were exchanged between the Spanish authorities and the commander of the *Maine*, Capt. Charles D. Sigsbee, and outwardly there was no evidence of the impending disaster. The *Maine* carried 26 officers and 328 men, all of whom were on board when the explosion took place, except an assistant engineer, two naval cadets and a gunner. Two officers and 250 men were killed at once and 8 men died afterward in hospital. Only 16 of the crew wholly escaped injury. Of the dead, 166 were buried in Colon Cemetery, and

25 at Key West. In 1899 the dead buried at Colon Cemetery were brought to the United States and buried at Arlington with military and naval ceremonies. A court of inquiry, Capt W. T. Sampson presiding, was instituted and after a month's investigation expressed the opinion that the vessel was destroyed by the explosion of a submarine mine, but responsibility could not be fixed upon any person or persons. Shortly afterward war was declared. (SEE UNITED STATES—THE WAR WITH SPAIN).

There was a very general demand throughout the United States that the *Maine* should be raised, and on 9 May 1910 Congress authorized operations and the matter was placed in charge of the War Department, and assigned specifically to the engineer corps of the army. An elliptical coffer-dam, composed of a series of huge contracted cylinders that were constructed of interlocking steel piles and filled with mud and stone, was placed around the wreck. It was a wonderful piece of engineering, reflecting great credit on every army engineer connected with its inception and execution. The coffer-dam was completed 5 June 1911, and the entire wreck exposed 2 November following. A joint army and navy board, of which Rear-Admiral Charles E. Vreeland was president, was then sent to Havana to reinvestigate the wreck. It reported 15 Dec. 1911, confirming the verdict of the Sampson court except in the non-essential detail that the centre of the explosion was a little farther aft than was reported by that court. The after half of the hull, all that was not shattered, was floated 13 Feb 1912, 14 years, lacking two days, after the *Maine's* destruction. On 16 March 1912 this relic of the once powerful battleship was towed to sea, with attendant ceremonies, afloat and ashore, and sunk in 600 fathoms of water. Concurrently 34 coffins, estimated to contain the bones of 64 of the *Maine's* dead, were placed on board an American war vessel and dispatched to Arlington, where, on 23 March, they were buried in the *Maine* plot.

**MAINE, University of, The,** a co-educational institution, situated at Orono, Me., about nine miles northeast of Bangor. The campus of more than 200 acres borders a branch of the Penobscot River. A part of the public educational system of the State, the university is a land-grant college, originally established as the State College of Agriculture and the Mechanic Arts under the provisions of the Morrill Act of 1862. The institution opened in 1868. The original name was changed to the 'University of Maine' in 1897.

The average number of students enrolled is approximately 1,800. Instruction is offered in 33 departments. The university includes the Colleges of Arts and Sciences, Agriculture, Technology, and School of Education. The Maine Agricultural Experiment Station was established as a division of the university in 1887. Graduate instruction is given in various departments and since 1923 graduate work has been a separate division in charge of a dean. A College of Law was opened in 1898 and discontinued in 1920. About 135 courses in 19 departments are offered in the Summer School. Extension work in agriculture and home economics is carried on throughout the State, co-operatively with the United States Depart-

ment of Agriculture. A limited number of extension courses in other fields are conducted. To provide permanently for the support of the university the State legislature in 1929 passed an act levying a tax of one mill on the general property valuation of the State. The degree of B.A., with specification of the major subject, is conferred upon students completing a curriculum in the College of Arts and Sciences. The degree of B.S. is conferred upon completion, in accordance with requirements, of four years' work in the Colleges of Agriculture and Technology. In the School of Education, the following degrees are awarded B.A. in Ed., B.S. in Ed., B.S. in Commercial Education, and B.S. in Fine Arts Education. The degrees of M.A., M.S., M.A. in Ed., and M.S. in Ed. are granted for one year's graduate work completed with distinction.

Fifteen fraternities and five sororities have chapters at the university. The fraternities maintain houses of their own. Other men live in university dormitories and private homes. Women live in dormitories, two of which are operated co-operatively, thereby substantially reducing these students' expenses for room and board.

Seven national honorary societies have chapters at Maine. One of them, Phi Kappa Phi, was founded at the University of Maine in 1897.

ARTHUR A. HAUCK,  
*President.*

**MAINE BOUNDARY TREATY.** The year 1910 witnessed the final settlement of the long-standing dispute as to the boundary line between Maine and New Brunswick. Secretary of State Knox, acting for the United States, and Ambassador Bryce, on behalf of Great Britain, signed a treaty which establishes the exact boundary of Maine for all time.

At the close of the Revolutionary War in 1783 the first attempt was made to fix a satisfactory boundary, but it resulted only in hopeless dissatisfaction. Ever since that time the matter has remained one for ceaseless wrangling and dispute. Scarcely a diplomat has been sent to this country from England but has been called upon to familiarize himself with the Maine-New Brunswick boundary situation; while the State Department of this country has gone over the ground so many times that that performance had almost come to be regarded as one of the regular duties of the department.

Most boundary lines are fixed by nature; those which are not do not as a rule amount to a great deal, and an amicable settlement can usually be reached at once. With the Maine-New Brunswick line, however, neither of these conditions have ever applied, particularly in that part which has so long been in dispute. This particular line runs through Passamaquoddy Bay, along the little islands at the mouth of the Saint Croix River. As a result of its indefinite character there has been endless dispute and strife among the fishermen who frequent these parts; dispute which had had an industrial significance since both the Eastport and Lubec canneries have sent their men to this point, and it makes a vast deal of difference whether they are fishing in American or Canadian waters.

The source of all the trouble was the looseness with which the first treaty, that of 1783, was drawn up. Article II of that document reads: "And that all disputes which might arise in future on the subject of the boundaries of the said United States may be prevented, it is herein agreed and declared that the following are, and shall be, their boundaries, viz.: From the northwest angle of Nova Scotia, viz: That angle which is formed by a line drawn due north from the source of the St. Croix River to the Highlands; along the said Highlands which divide those rivers that empty themselves into the river St. Lawrence from these which fall into the Atlantic Ocean, to the northwesternmost head of the Connecticut River," etc.

Thus, while the Saint Croix was plainly named as the beginning of the eastern boundary, the only point mentioned was the source of the river, and not a word was said about its mouth or the numerous islands of the great bay into which it empties. Moreover, there arose at once the questions as to what was the Saint Croix River. The trouble loomed up at the very start. The first action toward a settlement was taken in 1794 when John Jay was charged to adjust the matter. All he was able to accomplish, however, was a provision in his treaty of that year for the appointment of three commissioners to determine just what was the Saint Croix River. These commissioners met at Halifax in 1798 and determined the river, but neglected to mention its source and made no disposition of the islands at its mouth. Subsequently there were treaties, conventions and declarations between the United States and Great Britain relative to this subject in 1814, 1818, 1827, 1842, 1846 and in 1870, but in every instance there was something still left to be adjusted around the mouth of the river.

The Treaty of Ghent in 1814 provided for commissioners to settle the matter and they decided that Moose, Dudley and Frederick islands belonged to the United States, while all the other islands, including Grand Menan, were the property of Great Britain. This was very good so far as it went, but it left unsettled the status of several small islands in the Saint Croix and of the line itself through the bay. The channel thus remained in dispute.

In addition to this, trouble soon arose over the boundary line northward and westward from the source of the Saint Croix. The original treaty had been exceedingly vague on this subject, and finally in 1827 the king of the Netherlands was named as referee to conclude the dispute. After failing for a long time to satisfy either party with any of his suggestions, he drew a line to suit himself, awarding part of the disputed territory to Maine and part to New Brunswick. The United States rejected this arrangement, while in the meantime the disturbances on the border kept becoming more and more serious. Operations of the 1830 census takers in the contested area created much feeling, and eight years later an American lumber dealer was thrown into jail by New Brunswick officials—the act having much to do with the precipitation of the Aroostook war. Although no blood was spilled in this it came very near to maturing into a third war with England. A joint occupation was agreed upon as a temporary compromise, before Daniel Webster and Lord Ashburton came together in 1842

and drew up the famous treaty which settled all dispute as to that particular part of the boundary line.

It has been related as an historical fact that in these negotiations both nations withheld maps which were unfavorable to their claims. The Americans had one which had been discovered but a short time before in Paris, and was supposed to have been drawn up by Benjamin Franklin, while in the possession of the English was one made by Richard Oswald, who was one of the commissioners who negotiated in the treaty which gave the United States its independence. Later both nations showed these maps to their own people in evidence of how conclusively they had got the best of the bargain. Up to the present time, however, the United States has always regarded the signing of this treaty of 1842 as a diplomatic triumph.

The treaty of 1842, however, made no mention of any part of the boundary south of the monument which had been erected at the source of the Saint Croix, and until Secretary Knox and Ambassador Bryce signed their treaty of 1910 the lower part of the line in places was still contested. But with the signing of this latest treaty and the final settlement of the whole chaotic matter no point now remains between the United States and Canada which is in the slightest dispute.

**MAINS.** See ELECTRICAL TERMS.

**MAINTENANCE**, in its legal signification, the interference by a person in litigation in which he is not primarily interested, by assisting either party with money or otherwise. It includes champerty (qv), which consists of maintenance for reward or for a share in the proceeds of the litigation promoted. An agreement of this kind is illegal and void and at common law is punishable as an offense tending to obstruct justice. To-day where the common law prevails the wrongful intention with which the assistance is given is regarded as the gist of the offense. In many jurisdictions maintenance is no longer recognized as a criminal offense and in many States is not regarded as a civil cause of action by the injured party against a maintainer of the suit against him. See CRIMINAL LAW and consult the authorities referred to under that title.

**MAINTENON**, mǎn-tě-nôn, *Françoise d'Aubigné, MARCHIONESS DE*, French queen. b. Niort, Poitou, 1635; d. Saint-Cyr, 1719. Her birthplace was the prison in which her parents were confined because of religious trouble. After her father's death in her 10th year she became the ward of her guardian and aunt, Madame de Neullant, who gave her a somewhat limited education and through whose efforts she became converted to the Catholic faith at about the age of 14. She was then returned to her mother, whose income was insufficient for the child's support. Her humiliation did not embitter her bright and cheerful disposition, however, and when at 16 the famous wit and man of letters, Scarron, deformed, old and infirm as he was, became her husband, and she was soon the centre of the clever literary people who frequented his house. When Scarron died, her good sense and delightful disposition recommended her to many friends, who pointed her out to Louis XIV as a fitting per-

son to take charge of the education of the children born to him by Madame de Montespan. She undertook the office of governess to the royal children, won their affection and respect as well as that of the king, who married her in 1685 when she was 50 and he 47. There can be no doubt that she exercised a beneficent influence over the king's private life. She was undoubtedly disinterested and charitable, her character above stain in a profligate age, and her mind clear and resolute in pursuing the course she thought to be right. She survived the king four years and died at the nunnery at Saint Cyr which she had changed into a place of education for the poor daughters of families, having enjoyed to the end all the honor and position of a royal widow. Consult Blennerhassett, C. J., 'Louis XIV and Madame de Maintenon' (New York 1911); Dyson, C. C., 'Madame de Maintenon. Her Life and Times, 1635-1719' (London 1910); Geffroy, 'Mme de Maintenon d'après sa correspondance authentique' (Paris 1887); Noailles, 'Histoire de Mme. de Maintenon' (ib 1848-58); Pilastré, E., 'Vie et caractère de Mme. de Maintenon' (ib 1907).

**MAINZ**, mints, Germany, a town in the state of Hesse-Darmstadt, on the left bank of the Rhine, opposite the mouth of the Main, 20 miles by rail southwest of Frankfurt. It was a fortress of the first rank and is an episcopal see and a river port. The town rises gradually from the Rhine in the form of an amphitheatre. A railway bridge spans the Rhine a little above its junction with the Main, and a stone bridge connects with the opposite suburb of Kastel. A handsome quay, 330 feet wide, extends along the Rhine for a considerable distance, and large modern harbors have been constructed. The principal edifices are the cathedral, recently restored, a vast building of the 11th century; the former electoral palace, now containing the city library (230,000 vols.), picture gallery, museum of Roman and Roman-German antiquities, etc., the old collegiate church of Saint Stephen, occupying the highest site in the town, the church of Saint Peter, the German House, or grand-ducal palace with the arsenal adjoining, the courts of justice, the government buildings, public hall, two new concert halls, central railway station, etc. One of the most interesting objects in the town is the house of Gutenberg which contained his first printing office. A bronze statue of Gutenberg, by Thorwaldsen, stands in an open space near the theatre. The great open-air resort is the *Neue Anlage*, outside the gates, consisting of extensive public gardens, and commanding fine views of the town and surrounding district. The manufactures consist chiefly of leather, furniture, hardware, carriages, carpets, tobacco, beer, chemicals, musical instruments, gold and silver wares, machinery, soap, hats, etc. The trade, particularly transit, is extensive. The principal articles are Rhenish wine, corn, flour, oil, coal and wood. Mainz owes its foundation to a Roman camp which Drusus pitched here. On the decline of the Roman power it was almost entirely destroyed, but was afterward rebuilt chiefly by Charlemagne, and became the first ecclesiastical city of the German Empire, of which its archbishop-elect ranked as the premier prince. Pop. (1933) 142,627.

**MAIPO**, mī poo, or **MAIPU**, a river in Chile, having its rise in the Andes Mountains and flowing almost due west into the Pacific Ocean. It is 120 miles in length. The falls and rapids furnish valuable water power, which has not been utilized to any great extent. The city of Santiago is a few miles north of the river. On 5 April 1818 was fought on the banks of the Maipo the battle which decided the independence of Chile.

**MAIR**, mār, Charles, Canadian writer: b. Lanark, Ontario, 21 Sept. 1840; d. 1906. He was educated at Queen's University, Kingston, and entered journalism. He aided in quelling the Riel insurrections and was one of the organizers of the "Canada First" party. Among his works are 'Dreamland and Other Poems' (1868); 'Tecumseh,' a drama (1886).

**MAISON CARRÉE**, mā-zōn' ka'rā, Roman temple at Nîmes, France, the most perfect of its type remaining. It was probably built early in the Christian era, its inscription dedicating it to the adopted sons of Augustus, Gaius and Lucius Cæsar, although by some authorities its date is placed at about the 2d century. It is built on the plan of the Parthenon although its dimensions are smaller. It stands on a podium 11 feet high, measures 40×82 feet and is entered by a flight of 15 steps. There are 30 columns, of which 20 are in the side and rear walls while 10 form the portico. The temple now houses collections of antique sculpture and coins.

**MAISONNEUVE**, mā-zōn-név, Paul de Chomedey, SIEUR DE, French colonizer: b. Champagne, France; d. Paris, 9 Sept. 1676. He enlisted in the French army at 13 and later organized a band of colonists with whom he landed at Quebec in 1641. In 1642 he founded Montreal and was for 22 years its governor but was absent for a time in 1652 when he returned to France to conduct to America a new party of settlers. He displayed great administrative ability, but through the jealousy of De Mézy, governor-general of Canada, was in 1664 recalled to France by De Tracy. Though no charges were made against him he found no possibility of reinstatement in office and resigned in 1669.

**MAISTRE**, mā'tr, Joseph Marie, COMTE DE, French philosopher and savant: b. Chambéry, 1 April 1754; d. Turin, 26 Feb. 1821. He was of French extraction and was a senator of Piedmont at the time of the French invasion (1792). He left his country in consequence of that event, and afterward followed his king to Sardinia. In 1803 he was sent Ambassador to Saint Petersburg, and returned finally to Turin in 1817. De Maistre was familiar both with Greek and Latin literature, and his writings in French have obtained the highest praise of critics. He was a conservative in politics, religion and philosophy, a supporter of absolute monarchy and of the infallibility of the Pope. His 'Mémoires politiques et correspondance diplomatique' (published posthumously, 1858), however, shows him in the light of a much more discerning and less uncompromising politician than his formal treatises, and indicates a large and liberal appreciation of the revolution which he opposed. As a diplomatist he exerted himself to effect the restoration of all

his former possessions to his master, and to obtain the transfer of Genoa. Among his political writings are his 'Eloge de Victor Amadée III'; 'Considérations sur la France' (1796); 'Essai sur le principe générateur des constitutions politique' (1810), in which he maintains the divine origin of sovereignty; 'Du Pape' (1819); 'Soirées de Saint Petersburg' (1821; new ed., 1888); 'De l'Eglise gallicane' (1821-22); and 'Du Congrès de Rastadt' (the last with the Abbé de Padt). 'Quatre chapitres inédits sur la Russie par le comte Joseph de Maistre' was published by his son in 1859. Consult Descostes, 'Joseph de Maistre avant la révolution' (Paris 1893); Lescure, 'Joseph de Maistre et sa famille' (ib. 1893); Paulhan, F., 'Joseph de Maistre et sa philosophie' (1893).

**MAISTRE**, Xavier DE, French soldier, essayist and novelist, brother of Joseph de Maistre (qv): b. Chambéry, October 1763, d. Petrograd, 12 June 1852. He served in the Piedmontese army when very young, and his literary career began with his writing, 'Voyage autour de ma chambre' ('Journey Around My Room,' 1794), while in prison at Turin for participation in a duel. When Savoy was annexed to France he went to Russia and there secured a commission in the army, where he rose to the rank of major-general. He lived for a time in Naples after the restoration of the Piedmontese dynasty, but eventually returned to his adopted country and died there. His style was graceful and his work was marked by strong delineation of character and exceptional descriptive power. (See JOURNEY AROUND MY ROOM). He also wrote 'Le Lépreux de la cité d'Aoste' (1811); 'Les prisonniers du Caucase' (1815); 'La Jeune Sibérienne' (1815); 'Expédition nocturne' (1825). His complete works were published in three volumes (Paris 1825).

**MAISUR**, mī-soor'. See MYSORE.

**MAITIN**, mī'tān, José Antonio, Venezuelan poet: b. Porto Cabello, 1798; d. Choroni, Venezuela, 1874. In 1824 he returned from Havana to his own country whence he had fled on account of persecution, and made his home in the valley of Choroni. In 1844 his best poems were collected and published with the title 'Echos from Choroni,' and in 1851 a collected edition of all his works appeared.

**MAITLAND**, Edward, English mystic and writer: b. Ipswich, 27 Oct. 1824; d. Tonbridge, 2 Oct. 1897. He was educated at Caius College, Cambridge, and was destined for the ministry, but declined to take holy orders because of his incompatible religious beliefs. He was one of the "Forty-niners" in California and later went to Australia where he became a commissioner of Crown lands. He was married and widowed in Australia and in 1857 returned to England where he engaged in literary work of an humanitarian order. He made the acquaintance of Mrs. Anna Kingsford in 1874 and with her crusaded against materialism, vivisection and the use of animal food. In 1876 he announced that he had acquired a new sense which enabled him to see the condition of peoples' souls, as well as those of trees and animals, and likewise revived his memory of his own previous incarnations. He joined the Theosophical Society in 1883, but shortly afterward withdrew from



it and with Mrs. Kingsford founded the Hermetic Society which was of mystic rather than occult character. After the death of Mrs. Kingsford in 1888 he maintained that they remained in communication. In 1891 he founded the Esoteric Christian Union. He wrote for the *Spectator* and the *Examiner*, reviewed books for the *Athenæum*, and collaborated with Mrs. Kingsford in writing 'The Key of the Creeds' (1875), and 'The Perfect Way, or the Finding of Christ' (1882). Author of 'The Pilgrim and the Shrine' (1867); 'The Higher Law' (1869); 'By and By: an Historical Romance of the Future' (1873); 'Clothed with the Sun. Being the Book of the Illuminations of Anna (Bonus) Kingsford' (1889); 'The New Gospel of Interpretation' (1892); 'Anna Kingsford, Her Life, Letters, Diary and Work, By her Collaborator, with a Supplement of Post-Mortem Communications' (2 vols, 1896). After the completion of the 'Life' of Mrs. Kingsford, which, like most of his writings, was largely autobiographical, his mental powers failed rapidly.

**MAITLAND, Frederic William**, English historian: b. London, 28 May 1850, d. 19 Dec. 1906. He was graduated from Trinity College, Cambridge, and studied law; in 1884 was made reader of English law at Cambridge and from 1888 was professor of the same branch there. He read widely on legal history, founded the Selden Society in 1887 for the study of the history of English law and was a generally recognized authority. Among his works are 'Gloucester Pleas' (1884); 'History of English Law,' with F. Pollock (1895); 'Canon Law in England' (1898); 'English Law and the Renaissance' (1901), etc.

**MAITLAND, J. A. Fuller.** See FULLER-MAITLAND, J. A.

**MAITLAND, Sir Peregrine**, British soldier: b. Hampshire, England, 1777; d. London, 30 May 1854. He enlisted in the army in 1792 and was promoted rapidly, serving in Spain and at the battle of Waterloo, where he was a major-general. In 1818 he was appointed lieutenant-governor of Upper Canada and in 1828-34 was governor of Nova Scotia. He was made lieutenant-general in 1830 and commanded the Madras army, 1836-38. From 1843-47 he was governor and commander-in-chief at the Cape of Good Hope.

**MAITLAND, Sir Richard, Lord LETHINGTON**, Scottish poet and antiquary: b. Scotland, 1496; d. Edinburgh, 20 March 1586. He was educated at Saint Andrews and was one of the great lawyers of his day, and although he became blind in 1561 was nevertheless made a member of the Privy Council, and in 1562 keeper of the great seal. His manuscript collection of early Scottish poetry is preserved at Magdalene College, Cambridge. A selection from his collection, together with his own poems, was published in 1786, and his poems were reprinted in 1830 by the Maitland Club, a literary organization founded in his honor in Glasgow in 1828.

**MAITLAND, William**, Scottish statesman: b. Scotland, about 1528; d. Leith, 9 June 1573. He was a son of Sir Richard Maitland, Lord Lethington (q.v.), and was educated at Saint Andrews and on the Continent. He early

entered political life and was interested in the Knox reform movement; in 1558 he was appointed Secretary of State by Mary of Guise, and is commonly called "Secretary Lethington." He was one of the commissioners who concluded the Treaty of Berwick and in 1560 was speaker of the Scottish Parliament. He was one of Mary's ministers on her return from France, but was suspected of having betrayed her to Queen Elizabeth. In 1563 Maitland conducted a prosecution for treason against Knox whom he had earlier supported, and in 1565 he became lord of the sessions but was removed from office for implication in Rizzio's murder; he was also connected with the murder of Darnley. He contrived Mary's escape from Lochleven but fought against her at Langside. After the assassination of Moray he became the leader of the queen's party and was active in her support. He joined Kirkcaldy at Edinburgh Castle, and encouraged him to hold out until the last. He was taken prisoner at its surrender and died in prison. Consult Skelton, 'Maitland of Lethington and the Scotland of Mary Stuart' (1887-88).

**MAITLAND**, Australia, town, in Northumberland County, in New South Wales, on the Hunter River, about 119 miles north of Sydney by rail. It is connected by railroad with Newcastle, about 15 miles distant. The Hunter River divides the town into East and West Maitland, two distinct municipalities, West Maitland being the larger. The Hunter River frequently overflows its banks and floods the town and surrounding country. Although serious devastation results, the soil has been enriched by this flooding, and so fertile is this section that Maitland is called the "garden of New South Wales." Grapes, grains, tobacco and vegetables grow in abundance. Large coal fields are near the town. Considerable manufacturing is carried on, especially in West Maitland. Pop. of East and West Maitland, 12,000.

**MAIZE.** See CORN, INDIAN.

**MAIZEROT, René, BARON** (real name René Jules Jean Toussaint), French novelist: b. Metz, 2 May 1856. He was educated at the Jesuit College of Saint Clement, the Toulouse Lycée and the Saint Cyr Military School, becoming second lieutenant in the 53d regiment of Infantry. He resigned from the army in 1881 and entered upon a literary career. He contributed to *Le Gaulois*, *Figaro*, *Gil Blas*, *La Vie Moderne* and *Clarion*, and became a voluminous writer of fiction, also producing several pantomimes, ballets and dramas. Author of 'Le Capitaine Bric-a-brac' (1880); 'Souvenirs d'un officier' (1888); 'L'Adorée'; 'P'ti-Mi'; 'Le Reflet'; 'En Volupté'; 'Gloria, fille et marquise'; 'Yetto, mannequin'; 'Ville d'Amour'; 'La Mer' (1895); 'La Remplaçante' (1906); 'L'Amour en danger' (1912), etc. He died in 1918.

**MAJESTY** (Latin, *majestas*). *Majestas*, in a collective sense, was used in republican Rome to signify the highest power and dignity, the attribute of the whole community of citizens, the *populus*. The *majestas* was also ascribed to the dictator, consul, and even Senate, though in the case of the last the word *auctoritas* was used in preference. At a later period,

under the Roman emperors, *majestas* was the name of the imperial dignity, whilst that of a magistrate was called *dignitas*. To kings the attribute of majesty was given much later. The courtiers introduced the title into France under Henry II. In the Treaty of Crespy (1544) Charles V is styled *imperial*, Francis I *royal majesty*; and in the Peace of Câteau-Cambrésis (1559) the titles of *most Christian and Catholic majesty* are found for the first time. In England Henry VIII first adopted the title *majesty*, *grace* and *highness* being the titles formerly employed. At present this title is given to all European emperors and kings.

#### MAJOLICA AND MEZZA-MAJOLICA.

Spelled also maiolica. It is generally claimed that the word was derived from the island of Majorca, whence the first pieces of this ceramic ware were imported to Italy. The term majolica has become a very confused and indefinite expression and used by writers with different meaning. The term, in its first application, referred only to the early Italian lustre-ware made (15th century) with transparent silicious glaze and outer surface of metallic sheen in imitation of the lustre-ware of Hispano-Moresque creation. Later, the early enamel-covered and color-decorated wares of Italy were called majolica regardless of metallic lustre surface, and the lustre-ware having Oriental style of form and decorative treatment was termed *mezza-majolica*. But the term majolica has in modern times been vulgarized into a broader definition by the public including practically everything in ceramics having glaze coating and painted decoration. Leading experts retain the more distinctive terms. Lustre decoration consists of imparting a metallic or pearl-like (*nacreous*) sheen to the outer surface of the ceramic ware by coating over the already decorated and fired piece with a thin layer of a pigment containing either gold, silver, copper, etc., and then firing under moderate heat. The effects are very delicate and beautiful and are known, according to the different sheens produced, as ruby (rubino), gold, silver, mother-of-pearl (*madreperla*), etc.

**Mezza-Majolica.**—The earliest production of this ware was in Persia and Turkey, but it is only in quite recent years that the actual fabriques have been located. To this Turkish ware belong the pieces heretofore labeled "Lindos" and "Rhodesian" ware from the location of the sites where examples had been excavated. The actual sites of production now satisfactorily proven and dates of discovery of these prototypes of mezza-majolica are as follows: Rekka (1896), Sultanabad (1905), Rhages, quite recently. The ware formerly termed "Siculo-Arabian" is now said to have had its home in Syria or Egypt, and the so-called "Rhodesian" ware in Osmanli-Turkey. The latter has most brilliant coloring (blue, grayish-black, green, etc., and, later, red) and ornamentation as well as most masterly technique in execution. At Fostat, in Lower Egypt, lustrated and unlustrated ware was produced before the 12th century. We find among the Persian examples cylindrical vases, pear-shaped bottles, plates, tiles, bowls, mosque lamps, etc. In the Persian polychrome enamel-decorated ware of the 17th century we find dark

blue, yellow, green, purple, red, black, turquoise, all on very white ground, with typical Persian decoration (arabesques, flowers, turbaned heads, figures, etc.) Such 17th and 18th century ware was produced in northeast Persia, Bokhara, Kirman, Kashan, etc. Practically all this ware had its body coated (*engobe*). The Mohammedan tiles (known in Arabic as *rojolos*) were very beautiful and utilized in covering outside spaces of the mosques as well as the internal wells. Grand effects are those presented in the Blue Mosque, at Tabriz (15th century) and at Khoda Bende Khan shrine at Sultanieh (14th century), etc. Spain produced glazed ware as early as the 8th century (mosque of Cordova has examples). Through its Moorish artists Spain produced lustre-ware, an industry doubtless derived from Oriental sources, at an early date, Calatuyad having both domestic and export trade in the 12th century. This same gold-lustre ware was produced in Malaga during the 14th century, and, by the end of the 15th century, Manises, near Valencia, was the centre for the gold-lustre ware industry, retaining its pottery kilns to the present day. The yellowish tin-glaze on Spanish majolica covers both the inside and outside of vessels. Color is mostly cobalt blue, but coats-of-arms show a sparse use of brown and violet. The great Alhambra vase and pieces of a similar character belong to the 14th century and were produced in Granada. This Hispano-Moresque art was continued by the Christians after the Moors were expelled, but it soon became decadent in merit. The Spanish colored glazed tiles (*azulejos*) had the centre of that industry, in the early period, in Seville, but no lustre-ware appears to have been made there. In the Spanish decoration predominating motifs were plant life, Arab scripts, figures of animals and concentric circles. The frequent display of heraldic coats-of-arms shows Christian tendency later. The ware consisted mostly of dishes, basins, ewers, vases, apothecary pots (*albarellos*), etc. Talavera, in the 16th to 18th centuries, produced tin-enamelled ware prolifically. For some time, at least, Paterna, Quarte, Villelonga, Alaquá, Carcer, Moncada, etc., produced gold-lustre ware. The quality of the gold-lustre remained good into the 17th century though other ware became inferior long before. And the modern lustre shows coppery effect instead of the earlier pale gold tones. Alcora produced the best pieces Sicilian (Siculo-Arabian) mezza-majolica ware dates back to the 9th century.

**Majolica.**—Italy imported her lustre-ware from Spain and the island of Majorca, apparently, till about the 15th century, but, by the middle of the 14th century she had started her own mezza-majolica fabriques and by the first half of the 16th century the industry was in its zenith, to become thoroughly decadent by the end of the 16th century. The recent discovery in Faenza of the piece decorated with Astorgio Manfredi (1393-1405) coat-of-arms and the documentary statement of the contemporary writer Pietro del Bono (1330) make it appear that Italy was producing opaque under-glaze majolica in the 14th century besides her silicious transparent colored glazes (*mezza-majolica*). By the 16th century Italian majolica was being made in Pesaro, Urbino, Gubbio,

Caffagiolo, Treviso, Bassano, Nove, Padua, Candiana, Verona, Milan, Venice, Lodi, Turin, Genoa, Savona, Arbisola, Ferrara, Modena, Reggio, Scandiana, Sassuolo, Siena, Pisa, Asciano, Monte Lupo, San Querigo, Castel Durante, Citta di Castello, Bagnolo, Faenza, Forlì, Rimini, Ravenna, Bologna, Deruta, Fabriano, Spello, Viterbo, Rome, Capo di Monte, Naples, Grotaglia, Castelli in Abruzzo, Palermo and Catala Girone. Lustre-ware was produced only at Pesaro, Deruta, Gubbio, Urbino and Castel Durante; a few pieces made at Caffagiolo and elsewhere were experimental. The body of old Italian majolica is a buff-colored clay.

**Gubbio.**—This ware is famous for its lustre pieces. Those emanating from the studio (bottega) of "Maestro Giorgio" (early 16th century) are all elaborately decorated and have a lustre surpassing all other wares. His metallic reflecting surfaces, Solon says, "pass from bluish-purple to ruby-red, from golden-yellow to emerald-green," his *madre-perla* is absolute perfection. Few Gubbio pieces bear any marks, but besides the before-mentioned Giorgio Andreoli were other Andreolis—Salemmini, Giovanni and Vincenzo. The Gubbio fabrique was in decadent condition by 1551. The characteristic decoration of the ware consists of grotesques (*groteschi*), which the contemporary Piccolpasso terms "a candelliere"; they contain artistically executed large scrolls (in yellow or brown) terminating in the heads of sea-horses, monsters, birds, etc., with cherub heads intermingling, trophies with mottoes surround busts. As centre-piece appears a genre or other scene. Human figures show weak drawing.

**Urbino.**—Under the powerful protection of Duke Guid'Ubaldo II this town took a leading position in the second half of the 16th century with its flourishing majolica fabrique and its remarkably artistic creations. As these pieces were produced for presentation to grandees and even sovereigns perfection of detail and talented elaborate composition were undertaken. So high is the artistic merit of some of the painting that it is claimed to have been from the designs of the great Raphael himself. Three artists are prominent in this work: Guido Durantino (or Guido Fontana), Francesco Xanto da Rovigo (both of these signed in full), the latter copied, with modifications, engravings after Raphael; and Orazio Fontana (son of Guido), whose drawings are characterized by a light outline in the blue color that was utilized in the flesh tints. The Fontanas did also peculiar grotesque decorations on a white background with very graceful effect, some having medallions of figures as centre-pieces. The Patanazzi family (end of the 16th century) were the last of the majolica painters of Urbino. Amongst Urbino motifs were figures, chimera, etc., also we find ornament in relief on salt boxes, inkstands, vases, coffrets, etc., of very decorative form. But the most remarkable production of Urbino was a series of vases designed by Battista Franco, 344 lovely specimens of which are in the Santa Casa de Lorette. The general belief in the claim of Vasari that the originator of the opaque tin-glaze in Italy was Luca della Robbia (1399-1482) has been shaken since the discovery of the Manfredi jug (mentioned above), and it is now supposed that

Italian tin-glazed majolica was being produced by the 14th century at least.

**Mexican Majolica.**—Until about 10 years ago the fine specimens of old opaque tin-glazed majolica found in Mexico and sought for by collectors were supposed to be Spanish creations and imported by the colonists. Mrs. Robert W. deForest, with her fine collection of this ware (now donated to the New York Metropolitan Museum of Art), was led to take a generous interest in investigating the source of the product. And the late Dr. Atlee Barber of the Pennsylvania Museum, Philadelphia, by his researches disclosed the following facts: About 1526 the Spanish majolica technique was being taught to the colonists by Dominican friars from the Talavera potteries. In 1531 Pueblo de los Angeles started a pottery with Spanish artisans and became the centre of a large industry. Mexican-made enamel-glazed tiles were used, instead of the imported articles, to decorate the insides of the walls and also the exteriors of churches, hospitals, convents and even private houses. By 1653, as is shown by documents, the Mexican-made glazed pottery was equal to the imported and shipments from Spain were no longer in demand, and a potters' guild was established, to protect the industry in that year. By 1750 there were 30 prosperous potteries making three qualities of wares that they termed "fine, common and yellow." Five colors were used in fine ware, three in common ware. The best period was from 1650 to 1750. Specimens show two kinds of body—the white, soft, porous and the harder-baked red. The process used was that of baking the clay body first, then dipping in the tin enamel engobe and decorating over the enamel. The piece was then subjected to a second firing. The ware has been classified as follows: (1) "Hispano-Moresque" phase, up to the end of the 17th century. (2) "Spanish" or "Talavera" phase, from beginning of the 17th century to about end of the 18th century (showing Talavera influence). (3) "Chinese taste," done by copying pieces of imported Chinese porcelain, started 17th century and continued to end of 18th century. (4) "Hispano-Mexican" or "Puebla" phase, started about 1800 and lasted beyond 1850. Decadence followed, then extinction. The fourth style has green, yellow, purple, brown, red, black and later rose and mauve, in the decoration. Tiles have only three colors, blue, green and yellow, generally. The product consisted of chocolate or vanilla jars, vases, albarelli (drug pots), barrel-shaped flower jars, circular dishes, bowls, saltcellars, inkstands, basins, cup-holders, tiles, etc.

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**MA-JONG**, or **MAH-JONGG**, a Chinese game of doubtful origin, which for a time was extremely popular in the United States and Europe. It is played with 144 "tiles," somewhat resembling dominoes. Among the Chinese it is widely used as a gambling game.

**MAJOR**, Charles (EDWIN CASKODEN), American novelist: b. Indianapolis, Ind., 25 July 1856; d. 1913. He was educated in the public schools and studied law, establishing a practice at Shelbyville. He contributed to various magazines and published 'When Knighthood was in Flower' (1898); 'The Bears of Blue River' (1901); 'Uncle Tom Andy Bill' (1908); 'Dorothy Vernon of Haddon Hall' (1902); 'Yolanda, Maid of Burgundy' (1905); 'Gentle Knight of Old Brandenburg' (1909); 'The Little King' (1910); 'Touchstone of Fortune' (1912).

**MAJOR**, (1) *in music*, a term applied to imperfect concords, but chiefly to the interval of the third. It also denotes that one of the two modern modes in which the third is four semitones above the tonic or key note. (2) *In military science*, the major is a field officer ranking next below a lieutenant-colonel and above a captain. He has generally the command of a battalion, the exercises of which he superintends, and in action or on parade carries into effect the orders of his superior officer. The term in the French service has been superseded by that of *chef de bataillon*. A brigade major is an officer who performs for a brigade, or in garrison, the duties ordinarily discharged by a major in a regiment or battalion. A major-general ranks next above a brigadier-general. In other cases, the term major, when applied as an epithet to the several denominations of men in an army, signifies the superior of the department; as sergeant-major, the chief non-commissioned officer in a regiment, who assists the adjutant; drum major, the chief of the drum corps, etc.

**MAJORCA**, ma-jôr'ka (Spanish *Mallorca*; Latin, *Balearis Major*), Spain, an island in the Mediterranean, the largest of the Balearic group; area, 1,330 square miles. It is about 120 miles distant from Spain. It is very irregular in shape, and deeply indented, particularly in the northeast. The scenery is picturesque, the climate mild and agreeable, and in many of the valley regions vegetation is luxuriant. There are quarries of marble of various grades; lead and iron have been obtained, and coal to a considerable amount is mined. The olive and vine are extensively cultivated and there are large orchards of figs and oranges. The principal exports are bricks, lime, plaster, olive oil, light wines, brandy, wool and silk. There is a wireless station with a 500-mile range located at Soller, not only for ship and shore traffic, but also for international service. The capital is Palma. Pop. of island, 269,000.

**MAJORITY**. See ELECTIONS; PRIMARY, DIRECT, PRIMARY, PRESIDENTIAL PREFERENCE; VOTE, VOIERS, VOTING

**MAJUBA** (ma-joo'ba) **HILL**, an eminence in the extreme north of Natal, about 7,000 feet above the sea, the scene of the defeat of 648 British troops, with the loss of their leader, Sir George Colley, by a superior force of Transvaal Boers, 27 Feb. 1881. The attack was unexpected, and the Boers found the British resting after a night march and a climb of eight hours. The loss of the Boers was about 130, of the British more than 200 in killed and prisoners, besides many wounded and some missing. To the British nation the name Majuba Hill became a synonym for disaster. The anniversary of this fight was marked by the success of Lord Roberts, commander of the British forces in the campaign of 1900, when he received the surrender of the Boer commander, General Cronje.

**MAKAROV**, Stepan Osipovich, Russian vice-admiral: b. 1848; d. 13 April 1904. He entered the navy in 1864 and received rapid promotion for distinguished services. During the Russo-Turkish War 1877-78, he commanded the gunboat *Grand Duke Constantine*, and for a series of daringly successful attacks upon Turkish ports, which earned him the title of "the Cossack of the Sea," he was promoted captain of the second rank, aide-de-camp to the late Tsar Alexander II, was decorated with the orders of Saint Vladimir and Saint George and received a golden sword of honor. In 1881 he took part with the legion of Skobelev in the capture of Geok Tepe in which General Kuropatkin also figured prominently. The same year he commanded the cruiser *Taman*, the station guardship of the Russian embassy at Constantinople, and made a careful and complete study of the defenses of the Bosphorus. In 1882-83 he was chief of staff of the offensive squadron in the Baltic under Admiral Chihachev, Minister of the Navy. From 1891 to 1894 he was engaged in improvements of ordnance; among his inventions were the so-called cap guns possessing 20 per cent greater power of penetration into the newest superimposed armor; and the Ermak ice-breaker, the first of the ice-breaking vessels now used in Baltic and northern Asiatic waters. After the disastrous attack of the Japanese on the Russian fleet at Port Arthur in February 1904 Vice-Admiral Makarov was sent to the Far East to direct the Russian naval operations, and arrived at Dalny 8 March. He repaired and converted the blockaded squadron into an active aggressive naval force, but on 13 April was lured out of harbor by a decoy squadron. Discovering the Japanese main fleet trying to intercept him he at once returned and was about to enter the harbor, when his flagship, the *Petropavlovsk*, was destroyed by one of the sunken mines laid by the Japanese across the passageway, and Vice-Admiral Makarov, his guest, Vasil Vrestchagin (q.v.), the famous war-artist, 16 staff officers and over 800 sailors perished.

**MAKART**, māk'art, Hans, Austrian painter: b. Salzburg, 28 May 1840; d. Vienna, 3 Oct. 1884. He began his art studies in the Academy of Vienna. In 1859 he went to Munich, and painted in the studio of Piloty, under whose teaching (1861-65) he developed remarkable tal-

ent as a colorist. His earliest success was a Rembrandtesque picture of 'Lavoisier in Jail' (1862). His first work to gain him wide fame was his three-paneled picture, 'The Seven Deadly Sins' or 'The Plague in Florence,' which aroused a storm of adverse criticism, wonder and admiration in Paris and Germany. In 1869 the Emperor Francis Joseph built him a fine studio in Vienna, and he produced his series of 'Abundantia' pictures, 'Fruits of the Earth', 'Fruits of the Sea.' In 1873 followed the picture which attracted so much attention in the Exhibition of Philadelphia (1876), his 'Venice Doing Homage to Caterina Cornaro,' now in the National Gallery at Berlin. He traveled in the East during the winter (1875-76), and his Egyptian sketches materialized in his 'Cleopatra,' 'Antique Hunt on the Nile,' etc. His 'Entry of Charles V into Antwerp' (1875-78) gained a medal at the Paris Exposition of 1878 and his 'Diana's Hunting Party' is one of the most successful of his larger paintings, combining superb coloring and modeling of the nude with grand landscape effect. It is in the Metropolitan Museum of New York and is most characteristic of the gorgeous sensuousness of a painter who woke the intellectualists of German art to a sense of color, and broke free from the traditions of a somewhat stiff and pedantic method, gaining in life and intensity what he sacrificed of academic correctness. Consult Lutzow, 'Hans Makart' (1886); Suassny, 'Hans Makart und seine bleibende Bedeutung' (1886).

**MAKAW**, or **MACKAH**, **MACCAW**, **MACKAW**, **MI-CAW** ("CAPE PEOPLE"), Indian tribe of Cape Flattery, Puget Sound, Washington. They are the southernmost tribe of the Wakashan stock and the only one within the boundaries of the United States. They are of the Nootka branch. They claimed a considerable territory between Flattery Rocks and Hoko, but ceded to the government all these lands except that in the immediate vicinity of Cape Flattery in 1855. The Makaw reservation was defined in 1873, and an added reservation for the use of the tribe was established in 1893 and is known as the Ozette. On the two reservations there were in all 465 Indians in 1905, and their numbers are diminishing. In 1806 Lewis and Clark estimated the tribe to number 2,000. They are of peaceful habits, are skilful fishermen and expert at water craft.

**MAKEMIE**, Francis, pioneer of the Presbyterian Church in the United States; b. Rathmelton, County Donegal, Ireland, 1658; d. Accomac County, Va., 1708. He was a born missionary and zealot, and on being licensed by the presbytery of Laggan sailed for the British West Indies, and began work in Barbadoes. In 1684 he sought a wider field in Maryland and organized the first Presbyterian congregation at Snow Hill, capital of Worcester County, Md. After 10 years' labor as an itinerant preacher in most of the Southern States he returned to England and induced two other ministers to accompany him back. He was the first moderator of the presbytery of Philadelphia (1706), which he assisted in forming; and visited New York (1707), where he was imprisoned for preaching, though when brought to trial was acquitted of lawbreaking. Consult Briggs, 'American Presbyterianism' (1885); Sprague,

W. B., 'Annals of the American Pulpit' (Vol. III, New York 1858).

**MALABAR**, māl'-ā-bar', British India, in the presidency of Madras, in the southwest, bordering on the Arabian Sea. It occupies an area of 5,795 square miles. A great portion is low land along the coast, rising abruptly at the east where it is bounded by the Western Ghats. The western part is intersected by long, narrow ravines, and the whole is covered with vegetation, in many places large forests. About 38 per cent of the total area is under cultivation and 33 per cent is forest. The average annual rainfall is 116 inches. The climate, though damp, is fairly healthful. There are a number of tea and coffee plantations and a large amount of rice is raised. The principal towns are Cochin, Calicut, Tellicherry, Kananur and Mangalore. The name Malabar is often applied to the whole extent of coast country from Cape Comorin as far north as Bombay. Pop. including the Laccadives, 3,015,119, of which 68 per cent is Hindu, 30 per cent Mohammedan and 2 per cent Christian.

**MALABAR NIGHTSHADE**, a succulent edible vine. See BASELLA.

**MALABÓN**, Santa Cruz de, sán'tá crooth dā ma-la-bón', Philippines, a pueblo of the province of Rizal, Luzon, also known as Tambobong. See TAMBÓBONG.

**MALABUYOC**, mà-la-boo'yök, Philippines, a pueblo of the province of Cebú, situated at the mouth of the Malutuo River on the strait of Tañon, 60 miles southwest of Cebú, the provincial capital. Pop. 13,120.

**MALACCA**, ma-lák'a. See STRAITS SETTLEMENTS.

**MALACCA**, Strait of, the channel between the Malay Peninsula and the island of Sumatra, extending from lat. 1° to about 6° N. Entire length, about 520 miles; breadth, varying from 25 miles to 250 miles.

**MALACCA CANE**, an erect, slender-stemmed palm (*Calamus scipionum*) which, when dressed, is of a brown color, sometimes mottled or clouded. It is used principally for walking-sticks, and is brought from Singapore and Malacca, but is chiefly produced in Sumatra.

**MALACHI**, māl'-ā-ki, one of the 12 minor Hebrew prophets, after whom the last canonical book of the Old Testament is named. The date of the book is assigned to 460-450 B.C. Nothing definite is known of the author whose name in Hebrew signifies "My Messenger." Jerome supports a tradition given in the Hebrew targum of Jonathan which identifies Malachi as a pseudonym of Ezra (q.v.) "The Scribe." The general style, the character of the arguments and preachments against the evils of the times, of the book of Malachi (q.v.), are in favor of the tradition.

**MALACHI**, Book of. The book is perhaps actually anonymous. The author's name appears only in i, 1, which is very probably an editorial addition. The word Malachi means "My messenger," and may have been taken from iii, 1.

There is no serious question affecting the authorship of more than a few verses of the book. It has often been thought that ii, 11f expresses a spirit of narrow Judaism which is



inconsistent with i, 11. This is so upon one interpretation of the latter passage which makes it refer to the turning of the nations to Yahweh either in the present or the future. That, however, is probably not the correct interpretation. The verse in the context, particularly in relation to the following verse, seems to be clearly present and not future. At present it is not susceptible of the broader meaning given; that could not have been true at any probable time of writing. Hence the probable meaning is rather that worship is offered by Jews who are scattered widely among the nations; the reference is to the faithfulness of the Jews of the diaspora. Thus understood it is not inconsistent with ii, 11f.

Verses 4-6, chap. iv, are quite certainly a later addition. Verse 4 is a legal gloss, quite different from anything else in the book; verses 5-6 are a gloss upon verses 1-3, a restatement of much the same idea but from a different standpoint, one that is out of harmony with the book.

The mention of Edom, i, 2-4, gives a general indication concerning the date of the book. These verses indicate some recent crushing disaster to Edom, which is narrated in a spirit of hatred to Edom. This hatred began, the history shows, with the treacherous violence of Edom at the destruction of Jerusalem in 586. The disaster here referred to was doubtless one that came from the invasion of the Nabateans, and might have taken place at any time during a considerable period before 312 B.C. The general time between 586 and 312 is thus indicated. The temple had been rebuilt after the exile, i, 10; iii, 1, 10, and the enthusiasm of the time of its rebuilding had passed away. This indicates a time considerably after 516 B.C. The general condition of the people is that of the time of Ezra and Nehemiah, with the temple service in disorder and disrepute, i, 6-8, 12-13; ii, 1, 8, 17; iii, 7-10, 14, see Nehemiah x, 32-39; xiii, 10-13. Also, the divorce of Jewish wives and the marrying of foreign wives were found frequently, ii, 10-16, see Ezra, ix-x; Nehemiah x, 28-30; xiii, 23-31. There is in the book, however, no reference to the work of Ezra and Nehemiah. Hence the book is to be assigned to the period before their activity, and presumably not long before, perhaps about 460 B.C.

The message of Malachi was intended to be primarily one of encouragement to the discouraged people in Palestine. The principal comprehensive thought of the book is that Yahweh still loves Israel, in spite of appearances to the contrary. This is stated at the beginning of the book, in i, 2-5. The reason assigned for the adverse conditions from which the people were suffering was the failure of the people to do their duty toward Yahweh. This was particularly a failure in relation to the outward national service. The outlook of the prophet is, therefore, in a considerable measure, formal. Yet this formal side is accompanied by a real ethical interest, as appears in ii, 27. A high standard for priestly activity is set up in ii, 7. The assurance of further prosperity for the people if they amend their ways is in connection with the coming of the day of Yahweh.

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**MALACHITE**, a native basic copper carbonate and hydrate, having the composition  $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$ , crystallizing in the monoclinic system, but commonly occurring in massive form, or as an incrustation. It is brittle and has a specific gravity of about 4, and a hardness of from 3.5 to 4. Malachite is commonly subtranslucent, with an adamantine lustre. It is beautifully green in color, often banded with other colors and it occurs in many parts of the world, usually in connection with other ores of copper. Specially fine pieces are found in the Ural district, and at the Nizhne Tagilsk copper mines a deposit is known which contains at least half a million pounds of pure malachite. In the United States, the best-known deposits are those of Arizona. Malachite has been much prized as a gem stone and it is extensively used for panels, clock cases, table tops and other ornamental work.

**MALACHY, Saint**, Irish bishop: b. Armagh about 1094; d. Clairvaux, France, 1148. He belonged to the noble family of O'Morgair, was educated by Lombard, an anchorite, and ordained priest in 1119. He afterward studied at Lismore, and returning to Armagh was chosen bishop of Down and Connor (1125). His subsequent election to Armagh having been disputed (1129) he eventually, after a satisfactory settlement of the disputed questions and in accordance with his own desire, returned to the less important diocese, where he labored to secure for the Church a stronger foothold. In 1139 he set out on a mission to Rome. On his way thither he visited at Clairvaux and there began a lifelong friendship with Saint Bernard. He was commissioned in 1148 to go to Rome a second time, but was stricken on the journey and the last moments of his life were spent with Saint Bernard, at whose monastery he had stopped. He was a zealous reformer and to him is given the distinction of having opened the first Cistercian monastery in Ireland. The document known as 'Prophecy of Saint Malachy,' containing a Latin motto for each of the popes, is now considered not to be his production. He was canonized in 1190. Consult O'Hanlon, 'Life of Saint Malachy' (1859); Migne, J. P., 'Patrologia Latina' (Vols. CLXXXII, CLXXXIII).

**MALACOLOGY.** See MOLLUSCA.

**MALACOPTERYGII**, māl-a-kōp-te-rj'i-i, or **MALACOPTERI**, a group of fishes, in former systems of classification, including those with jointed and spineless or "soft" fin-rays. Compare ACANTHOPTERYGII; and see ICHTHYOLOGY.

**MALACOSTRACA**, one of the two primary divisions of the Crustacea to which all of the larger and more highly organized forms belong. The number of pairs of appendages and of segments is definite, the former being always 19 and the latter 19, except in the order *Leptostraca* which have also two abdominal

segments limbless. The boundary between head and thorax is not always clearly defined but the two always comprise 13 segments, of which five almost always belong to the head; the abdomen has six limb-bearing segments and is terminated by the telson which is probably a seventh segment. The head bears a pair of eyes, usually stalked, two pairs of antennæ, a pair of crushing jaws or mandibles and two pairs of maxillæ, to which a pair of maxillipeds is sometimes added (*Arthrostraca*). Of the typically eight thoracic segments from one to three bear maxillipeds and the remainder walking feet. In most cases the thorax is more or less completely covered by a carapace. The mode of development is varied, sometimes, as in the crayfish, it is direct, sometimes with a nauplius, but usually through the larval form called zœa (see LARVA), which possesses paired eyes as well as a median eye, a swimming tail and usually seven pairs of appendages. The subdivisions are:

Order <i>Lepidostrea</i> ( <i>Nebalia</i> )	
Order <i>Arthrostraca</i>	<ul style="list-style-type: none"> <li><i>Amphipoda</i> (beach fleas)</li> <li><i>Isopoda</i> (wood lice)</li> <li><i>Cumacea</i> (<i>Diastylis</i>).</li> <li><i>Stomatopoda</i> (<i>Squilla</i>)</li> <li><i>Schizopoda</i> (<i>Mysis</i>).</li> </ul>
Order <i>Thoracostraca</i>	<ul style="list-style-type: none"> <li><i>Decapoda</i> <ul style="list-style-type: none"> <li><i>Macrura</i> (lobsters and shrimps).</li> <li><i>Brachyura</i> (crabs).</li> </ul> </li> </ul>

See CRUSTACEA

**MALADE IMAGINAIRE**, ma-lad ē-mā-zhē-nār, *Le*, a comedy in five acts by Molière. It was produced in Paris (1673), was the last work of its author and the last in which, as Argan, he appeared on the stage. See MOLIERE

**MALAGA**, māl'a-ga (Sp mal'a-ga, ancient MALACA), Spain, capital of the province of Malaga, on a small arm of the Mediterranean, about 65 miles northeast of Gibraltar. It was a Phœnician and afterward a Carthaginian colony, was a flourishing city under the Romans and its long occupation by the Moors has left distinct marks in the older parts of the town; the Gibralfaro, or Moorish castle, on a hill overlooking the town, and considerable portions of the ancient fortifications, yet remain. Among the important buildings are the cathedral, a highly decorated structure in the composite style with a spire 300 feet high; the episcopal palace, custom-house and several hospitals and charitable institutions, etc. The manufactures consist chiefly of iron, the ore of which is obtained from rich mines in the vicinity; soap, cottons, linens, machinery, etc. Wonderful gardens lie outside the town, like the Haciendas de la Concepción and De San José, where marvelous effects are produced by carefully tended sub-tropical vegetation. Along the coast in the direction of Vélez Malaga are ancient Moorish watch-towers, used, after the fall of Granada, against the Moors themselves, who often descended upon the coast to plunder and destroy. The harbor is excellent and the trade is of importance, the principal exports being olive oil, lead in bars, wine and fruit, particularly raisins, oranges and almonds. There used to be a great export of raisins to the United States, the consumption of which, however, declined in favor of the California product. The climate, mild, dry and equable, makes Malaga one of the finest resorts for invalids in Europe. Pop. 203,000

**MALAGA WINE**, a sweet Spanish wine produced in the province of Malaga. It is one of the "muscatel" wines, and is rich, luscious and full of body. See WINE AND WINE-MAKING

**MALAGASY SUBREGION**, a faunal division of the Ethiopian Region in Zoogeography which embraces Madagascar and some small neighboring islands. See MADAGASCAR; ZOOGRAPHY

**MALAKOFF**, ma'la-kōf. See SEBASTOPOL

**MALAMPAYA**, ma-lam-pa'yá, a sound on the northwest coast of the province of Paragua, island of Palawan, Philippines; it is an arm of the China Sea, extending 24 miles northwest to southeast, and from three to six miles wide. It is entirely landlocked, Tuluran Island protecting it from the China Sea, and is entered by Blockade and Endeavor straits. Its depth varies from 36 to 54 feet, it is free from sunken dangers to navigation, is one of the finest harbors in the Philippine Archipelago and has been suggested as one of the best locations for a naval station between Balabac and Manila.

**MALANAO**, māl-lā-now', the name commonly given the Moros, especially Ilanos, who live on the shores of Lake Malanas, island of Mindanao. See PHILIPPINE ISLANDS

**MALAPROP**, Mrs., a character in the 'Rivals' of Sheridan. Like Shakespeare's Dogberry she is made to employ words of the same length, accent and more or less similar vowel and consonantal value, interchangeably. Hence her well-known "Allegory on the Banks of the Nile"; "Derangement of Epitaphs"; "A Barbarous Vandyke," etc

**MALAPTERURUS**. See ELECTRIC FISHES

**MÄLAR**, mäl'ar, *Lake of*, Sweden, a lake running inland from the Baltic about 81 miles, with an average breadth of 13 miles and an area of 450 square miles. It contains upward of 1,200 islands. Its east end is closed by Stockholm, where its waters are poured into the Baltic by various channels, the difference of level being about six feet. It is surrounded by the populous districts of Stockholm, Nyköping, Upsal and Westeras, and the shores are varied with bays and hills, woods, lawns and cliffs, and are adorned with many castles, country-seats and villas, including the royal palaces of Drottningholm and Gripesholm.

**MALARIA**, an infectious disease due to animal parasites and which is characterized by intermittent attacks of chills and fever, so-called intermittent fever, or a continued fever with remissions; or by a chronic malarial cachexia. Malaria is a disease which is very widely distributed. It is found throughout Europe, particularly in the more southerly regions, Italy and Spain, but is absent in the more northerly parts of the Continent, where the temperature prohibits the development of the mosquito, the chief carrier of the disease. In Asiatic countries, particularly in India, malaria is very frequent; and in Africa different types of malarial fever constitute a feature most obnoxious to colonization. In the United States, particularly in the Southern States, malaria prevails. Along the New England coast, where it at one time was very common, it has become much diminished in prevalence and in severity. The Pacific Coast region is free from the disease,

and the Northwest States are comparatively free. In the region of the Saint Lawrence River malaria is unknown.

In order to understand clearly the different forms of malarial fever, it is important to bear in mind that the different types are due to minute animal parasites which enter the blood, usually by the bite of one of a particular genus of mosquitoes (*Anopheles*) (See MOSQUITOES AND THE PROPAGATION OF DISEASE). The parasite develops after its introduction into the blood and, according to the individual type that is introduced, certain variations in the developmental history of the disease result. The parasites themselves, which are thought to be low forms of animal life, protozoa, develop, for the most part, in the red blood-corpuscles and have many allies in the red blood-corpuscles of other animals, as frogs, fish, birds, monkeys, cats, etc.

These organisms were first clearly demonstrated by Laveran, a French army surgeon, in 1880, and his early observations were enlarged and amended by Golgi, Marchiafava and Celli, Manson and Ross, and a host of others. At the present time at least three forms of the parasite *Hamatozoa malariae* are known, the parasite of tertian fever, the parasite of quartan fever and the parasite of æstivo-autumnal fever. These parasites have two cycles of development, one taking place in the body of man and the other in the body of the mosquito. Thus a patient with malarial fever infects a mosquito with a parasite which undergoes certain transformations within the body of the mosquito, and is then in turn introduced into the body of another patient, to cause typical attacks of fever according to the type of parasite introduced. Occasionally two different parasites are introduced into the patient's body and a mixture of the two forms of the disease results.

The commonest form of malarial fever (the so-called chills and fever, or ague) is due to the tertian and quartan parasites. In these, after an unknown period of incubation, probably from 36 hours to 15 days, the patient has a feeling as though he were going to be sick, sometimes with headache, sometimes a feeling of lassitude and a desire to yawn and to stretch. Occasionally the patient has nausea and vomiting. At the same time the temperature has begun to rise and a chill commences. He begins to shiver, the face becomes drawn, thin and cold, the body shakes, the teeth chatter and the skin may be cold and blue, although the internal temperature is known to be gradually rising. After from 10 to 15 minutes, or perhaps a longer time, the chill is followed by a hot stage. The coldness of the surface disappears and the face becomes congested and flushed, the skin is red, the pulse is full and the patient may have a throbbing headache, with mental excitement. Thirst is excessive. Then the period of sweating begins, the whole body being covered with perspiration; the temperature drops, the headache disappears and in an hour or two the paroxysm is over.

A number of variations from this typical form are known. In the tertian type of fever the chill and fever usually occur every other day. This is due to the fact that the cycle of development of the tertian parasite is about 48 hours and that the stage of full development of

the parasite, or sporulation, which is more or less coincident with the attack, occurs at these times. Thus every third day the patient has an attack, hence the term "tertian." In the mixed infections, when two sets of parasites develop on alternate days, the paroxysms of chills, fever and sweating may occur every day. In the quartan type of fever the cycle of development of the parasite is completed every fourth day. Mixed infections also occur in this form of the disease. In the northern United States these are the types of malaria which are more common, but below Mason and Dixon's line a much severer form of the disease is present. This is the æstivo-autumnal type, which gives rise to the so-called bilious remittent fevers and typho-malarial fevers of the South. In these the symptoms are extremely irregular. The paroxysms occur every 24 or 48 hours, and longer remissions are known. The length of the paroxysms is usually longer, lasting 20 hours, instead of 10 or 12 as in the tertian form; the onset of the disease is usually slow and gradual; and there may be no chill. Occasionally there is a continuous fever without much break, the temperature ranging from 102° to 103° F. Jaundice is not infrequent, and this, with the fever and a furred tongue and mental disturbance, often gives rise to the suspicion of typhoid fever. In the simpler types the patient may get well after 10 days or two weeks without any special medication. The more severe forms may be fatal unless prompt diagnosis and medication are instituted. The diagnosis of malaria should always include an examination of blood and the demonstration of the parasite. In the vast majority of untreated cases the parasite can be found. Occasionally, however, repeated examination fails to show it.

Treatment should be prophylactic as well as actual and attention should be paid to the avoidance of infection no less than to care of the disease itself. Rigid protection of houses by means of screens to keep out the *Anopheles* is one of the most important procedures. Furthermore, it is highly essential that the mosquitoes themselves should be protected from the infection by screening all patients suffering from malarial fever. In order to do this the patient's couch should be surrounded by mosquito-netting and all mosquitoes in the room of the malarial patient should be killed by means of pyrethrum-powder. Further measures for destroying malaria should be taken by draining off swamps and employing proper engineering methods in order to get rid of the mosquitoes themselves. The planting of swamps with leafy trees often dries them up and thus prevents the formation of breeding-places for mosquitoes. Finally the specific, quinine, should be used in all cases. It is a prompt and sure parasiticide and in its varied forms can be used by almost every patient, despite individual idiosyncrasies.

In the consideration of some of the chronic forms of the disease a number of perplexing conditions are met. Thus, following constant exposure to malaria and repeated attacks of the disease, symptoms of anæmia, of breathlessness, swelling of the feet and ankles, bleeding in different parts of the body and enlarged spleen may be found. This is a type of infection known as malarial cachexia. It is found in southern countries and should be distinguished

from the cachexia due to various forms of intestinal parasites. See Mosquito; MIASMA; MICROSCOPY, CLINICAL

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**MALARIAL CACHEXIA, or ANÆMIA.** See HOOKWORM DISEASE

**MALARIAL FEVER.** See MALARIA.

**MALASPINA GLACIER**, Alaska, glacier extending from Mount Saint Elias, at an elevation of 18,000 feet, to Yakutat Bay, a distance of 90 miles, while its front on the Pacific is between 60 and 70 miles wide. It was named in honor of the Spanish explorer, Alejandro Malaspina, who traversed the region in 1789-94 in search of the Northwest Passage. With its tributaries, the Seward, Agassiz, Tyndall and Guyot, the Malaspina covers some 1,500 square miles of ground, and has a depth of more than 1,000 feet. As it reaches the Pacific it breaks into dangerous icebergs which threaten navigation, but leaves a front of great ice palisades.

**MALATESTA**, a noble Italian family, leaders of the Guelphs in Romagna and rulers in Rimini in 1216-1528. Giovanni and Malatesta of the Malatesta tribe entered Rimini in 1216 and were granted citizenship in consideration of their aid against Cesena. The family rapidly gained in power and in 1237 Giovanni was named podestà. He was succeeded upon his death in 1247 by his son, Malatesta de Verrucchio, who became supreme ruler in 1295 and who steadily increased his power until his death in 1312 at the age of 100 years. He also increased the power of the Guelphs and enjoyed the favor of Pope Boniface VIII. Of his four sons, two were Giovanni and Paolo, husband and lover of Francesca da Rimini, whose story is told in Dante's 'Inferno'. Malatestino, the eldest son of Malatesta, succeeded him upon his death in 1312, maintained the power of the Guelphs, annexed Cesena and dying without issue in 1317 was succeeded by his youngest and only surviving brother, Pandolfo. The power of the Malatestas was extended over neighboring territories in succeeding years and the family became one of the most influential of the Renaissance. Carlo (b 1394; d 1429) was an ardent supporter of the popes, represented Gregory XII at the Council of Constance and was named vicar of the church in Romagna. His nephew, Sigismondo (b. 1417; d. 1468), was a valiant soldier, a patron of arts and letters as well as a poet and renowned antiquarian. He built the church of Saint Francis, or temple of Malatesta, one of the most beautiful structures of the Renaissance. He made war for and against Pope Eugenius IV; against Venice and Florence with the Aragonese, then against the Aragonese at Piombino. He afterward fought with and against the Sieneze, supported the cause of the Angevins and was excom-

municated and burned in effigy by Pope Pius II. He was afterward restored to the Church but before his death he was practically stripped of his powers and possessions. He was succeeded by his wife, Isotta, and his son, Salustio, but both were murdered by an illegitimate son, Roberto. Roberto's son, Pandolfo IV, was the last Malatesta to rule Rimini, and he sold his rights to the Venetians in 1503. Thereafter the Malatestas at various times endeavored to regain control of Rimini until 1528 when it was incorporated in the papal states. The Malatestas became citizens of Venice and the Rimini branch became extinct in 1716. Consult Battaglini, 'Memorie Storiche di Rimini e de suoi signori' (Bologna 1789); Fossati, 'Le tempi di Malatesti di Rimini' (Foligno 1794); Hutton, 'Sigismondo Malatesta' (1906).

**MALATIA, MALALIETH, or AZPUZU**, Asiatic Turkey, chief town and military post in the vilayet of Malatia at the foot of the Taurus, on the Samsun-Sivas-Diarbekr Road, 10 miles southwest of the junction of the Tokhma-Su with the Euphrates and 100 miles northeast of Marash. The town is modern, being practically rebuilt since the earthquake of 1893; and previous to that dating to the middle of the 19th century when the old Malatia was abandoned after its destruction in the military operations of Hafiz Pasha, the new town being built on the site of the former summer colony Azpuzu. The old town of Malatia (ancient Melitene) lies five miles to the northeast of the present town and is now known as Eskishehr. It has many inhabitants, extensive gardens and interesting ruins. It was the station of the 12th, or "Thundering Legion," under Titus and was raised to a city under Trajan. It was capital of Armenia Tertia under Justinian. It changed hands between the Greeks and Saracens several times, was reputed to possess 60,000 fighting men at the opening of the 11th century and in 1102 was returned to Saracen control. The modern Malatia is an important trading centre and the district is famous for its orchards and vineyards. A fine grade of opium is also produced. There are Roman Catholic and Protestant missions. The population includes many Christian Armenians besides the Turks and Kurds. There was a massacre of Christians in 1895. Pop. (estimated) 75,000.

**MALAUUC, ma-low'ek**, a provincial language, used largely in commerce in Luzon, Philippine Islands (qv)

**MALAY (mā-lā) ARCHIPELAGO.** See EAST INDIES or MALAY ARCHIPELAGO

**MALAY PENINSULA** (Malay, Tanah Malayu, or Malay Land), a long strip of land extending from Indo-China south and southeast toward the island of Sumatra, the most southerly part of the Asiatic continent. The peninsula begins properly at the head of the Gulf of Siam, and would thus include part of Siam proper and the British province of Tenasserim; but it is usual to limit the name to the portion south of the river Pakshan, the frontier of Tenasserim. In the larger sense, the length of the peninsula is about 870 miles long and its area 83,000 square miles; the population is estimated at about 2,000,000. The width varies

from 45 miles to 210. The interior consists mainly of magnificent wooded granite mountain ranges, some of whose peaks attain a height of 7,000 feet; while along the coast there is almost everywhere a flat and fertile belt, fringed with numerous islands. There are numerous small rivers. The mean annual temperature near the sea is about 80°. There is no winter, but rains are frequent through the year. The humidity of the climate renders it very trying to foreigners. Tigers and leopards are numerous and of great size. The Indian elephant, the rhinoceros and several species of monkeys are found; also the vampire bat, poisonous snakes and many beautiful and brilliant birds. Tin abounds and is largely worked. Silver and gold are also found in paying quantities. There are over 40 varieties of palm in the peninsula and the vegetation is that of the luxuriant tropical kind. In physical features the peninsula resembles rather the islands of Sumatra and Java than Indo-China. The inhabitants are mainly Siamese in the north, civilized Malays (qv) along the coast and uncivilized Malays, mixed with aboriginal Negrito tribes, in the interior. Politically, the northern part of the peninsula is occupied by small states tributary to Siam (as far south as 5° N.); the southern part by Malay states under British protection (as Perak, Salangor, Negri Sembilan, and Pahang, known as the Federated Malay States) and the British Crown colony of the Straits Settlements, comprising Singapore, Malacca and Penang. (For the commerce, industries, education, transportation facilities of the peninsula see articles on the individual states or groups of states, as FEDERATED MALAY STATES; BURMA; PERAK; PAHANG; SINGAPORE; STRAITS SETTLEMENTS). Consult Bishop, 'The Golden Chersonese' (London 1883); Clifford, Hugh, 'Studies in Brown Humanity' (ib. 1898); id., 'In a Corner of Asia' (ib. 1899); Lucas, 'Historical Geography of the British Colonies' (Oxford 1894); Rathbone, 'Camping and Tramping in Malay' (ib. 1898); Skeat, W. W., 'Malay Magic: An Introduction to the Folklore and Popular Religion of the Malay Peninsula' (ib. 1900); Foran, W. R., 'Malayan Symphony' (London 1935); Winstedt, R. O., 'History of Malaya' (London 1935); Bush, W. C., 'Pahang' (New York 1938); Emerson, R., 'Malaysia' (New York 1937).

**MALAY STATES.** See FEDERATED MALAY STATES.

**MALAYALAM**, an independent Dravidian dialect of southern India, originally allied to Tamil and spoken on the Malabar Coast by between six and seven million inhabitants called Malayalim or Malabars who form a separate race with distinctive castes, customs, traditions and literature. Malayalam is said to have developed from Tamil since the 9th century and now differs from it in pronunciation and in idiom, and in the retention of old Tamil forms obsolete in the modern languages. Sanskrit words are more numerous in Malayalam, while in Tamil, they are less than in any other Dravidian tongue. Malayalam appears about A.D. 1150 in inscriptions of the rulers of Kerala from Travancore and has an extensive literature, of which the 13th century epic 'Ramacharitam,' the oldest poem in the language, and a collection of 1,000 Malayalam proverbs published in Man-

galore in 1868 are notable examples. See DRVIDIAN. Consult Ellis, F. W., 'Dissertation on the Malayalam Language'; Gundert, 'Malayalam Dictionary' (1872); Frohmyer, 'Progressive Grammar of the Malayalam Language for Europeans' (Mangalore 1889); Menon, T. K. K., 'Notes on Malayalam Literature' in *Royal Asiatic Journal* (London 1900).

**MALAYAN BEAR**, or **SUN BEAR**, a small bear (*Ursus malayanus*), found in the Malayan Archipelago, Borneo, Sumatra and Java. It is about four and a half feet in length; the fur is black, fading into brown on the nose which is remarkably broad and blunt. The chest bears a crescentic white mark, or an orange-colored, heart-shaped patch.

**MALAYAN SUBREGION**, a faunal division of the Oriental Region, composed of the southern end of the Malay Peninsula and all the islands of the Malay Archipelago as far as the Philippines and to the Straits of Macassar, where this district is separated from the Australian and Papuan subregions by Wallace's line (qv). The fauna of this subregion is composed of animals adapted to a uniform but not extreme heat, coupled with abundant moisture. The orang-outang and the birds of paradise are its most characteristic groups. See DISTRIBUTION OF LIVING MAMMALS; ZOOGEOGRAPHY.

**MALAYS**, a race of people inhabiting the Malay Peninsula and the Malay Archipelago, and claiming to have their native country in the highlands of Sumatra. The civilization of India appears to have extended itself to the Malays at an early date. In the 13th century the Malays were on the peninsula of Malacca, where they built a city of the same name, and founded an empire. The sultans had subdued Sumatra previously to their settling in Malacca. They afterward possessed themselves of the rest of the Sunda Isles, of the Philippines, the Moluccas and some of the Australian groups, where Malay tribes are found resembling, in their features, religion and government, the Malays of Malacca. At that time they acted a splendid part in Asia; they carried on commerce, in part with their own ships, and planted colonies. Great numbers of ships from China, Cochin China, Hindustan and Siam filled the harbors of Malacca. They are now divided into distinct tribes, without any general head. This is partly owing to the superiority which the Europeans, particularly the Dutch, have obtained in the Indian seas, and partly to the feudal system of the Malays, by which the national power has been divided and a common spirit prevented by the increasing power of the vassals. The civilized Malays profess the Mohammedan religion. Besides the Koran, the Malays have various local laws. They are fierce and warlike, always bearing arms, and much addicted to the use of force, treacherous in their alliances and were formerly addicted to piracy. The Malay language is widely used as the language of commerce throughout the South Seas and in the islands south of the Philippines. Physically considered the Malays are of low stature, slight in figure and with very small wrists and ankles. The face is round, the eyes black and somewhat almond-shaped, the nose short and small, cheek bones prominent, features flat, the hair straight



and black, the complexion yellowish. In various respects they bear a close resemblance to the Mongolians of eastern Asia, but differ from them radically in language, all their dialects belonging to a distinct Malayo-Polynesian family which is widely distributed throughout the Indian and Pacific oceans. The Malays long pursued a piratical career, darting from hidden streams in their well-manned proas on any vessel that approached too near the coast, or more boldly lying in wait in fleets in the open sea, for any expected rich prize. Of late years the lessons taught them by European and American war vessels have forced the Malays to desist from piracy, their old lawless, roving habits being largely abandoned for their more settled occupations of trade and agriculture. Among the many Malay tribes are the Sakais, or tree-dwellers, who build their houses in forked trees, 8 to 12 feet above the ground, reached by bamboo ladders which are hoisted at will. The tree-dwellers formerly made use of long blow-guns shooting poisoned arrows. The bamboo furnishes most of their articles of ornament and utility. The blow-gun was a bamboo about an inch and a half in diameter and six and a half feet in length. The bore, drilled most accurately, was a quarter of an inch, and the darts nine inches in length, about the circumference of a heavy darning-needle, sharpened at one end and poisoned. With these they secured all the meat they eat in the jungle — birds, monkeys, snakes and lizards. They also have knives made of bamboo.

The Malay intellect varies from that of savagery in the uncivilized tribes of the interior to a rather high degree of culture among the coast tribes. Much of their civilization is due to foreign influences, chiefly Hindu and Arab. The Malay language, which is soft and harmonious and of simple structure, is written in the Arabic character, which is ill suited for the purpose. Lately the Roman system has been largely adopted, especially in the Dutch and English dependencies. The literature, which is copious, comprises poetical compositions, such as rhyming-proverbs, love-songs and dramas displaying some originality, but little imagination. The prose writings are mostly based on Arab or Persian models.

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**MALBAIE**, Canada. See **MURRAY BAY**.

**MALBONE**, māl-bōn', Edward Greene, American painter: b. Newport, R. I., August 1777; d. Savannah, Ga., 7 May 1807. As a boy he was in the habit of frequenting the theatre at Newport to watch the painting of the scenes. At that early age he executed an entire scene, a landscape for the stage, the success of which encouraged him to devote his attention exclusively to painting. At 17 he established himself in Providence as a portrait painter. Meeting with success, he removed in 1796 to Boston, and during the next four years pursued his art in various cities. In 1800 he accompanied Washington Allston (q.v.) to Charleston, and in the succeeding year the two young artists sailed for Europe. Malbone when in London was urged by Benjamin West to take up his permanent residence there with the prospect of ample professional employment; but he returned to Charleston in December 1801. For several years he painted miniatures in the chief cities of the United States with great reputation. His principal imaginative work is 'The Hours,' in which the divisions of the day are personified by female figures.

**MALBROUK**, māl-brūk', a yellowish, grizzled monkey of West Africa (*Cercopithecus cynosurus*), distinguished from other species of the genus (called guenons) by its wide flesh-colored face with a band across the forehead, the bristly whiskers and ventral part white.

**MALCOLM**, māl'kom or mā'kōm, the name of four Scottish kings: **MALCOLM I** reigned from 943 to 954, and during this period occurred the cession of Cumbria to the Scots by Edmund I, the English sovereign. **MALCOLM II** (d. Glams 1034), succeeded Kenneth II in 1005 and in his reign Lothian and Strathclyde were secured to Scotland. **MALCOLM III**, surnamed Canmore (Great Head); b. about 1024; d. near Alnwick, Northumberland, 13 Nov. 1093. After the murder of his father, Duncan, by Macbeth, he was assisted by Siward of Northumbria, and Edward, the Confessor. After the death of Macbeth he was crowned at Scone in 1057. In 1067 he granted asylum to Edgar Atheling, his mother, and two sisters (one of whom, Margaret, he married in 1068), with a number of Saxon exiles. His reign, though largely concerned in warring with England, had nevertheless an important bearing on the civilization and consolidation of Scotland. **MALCOLM IV** (the Maiden), d. Jedburgh, 9 Dec. 1165, succeeded his grandfather, David I, in 1153. He suppressed two rebellions in his realm and surrendered Northumberland and Cumberland to Henry II in 1157.

**MALCOLM**, **SIR JOHN**, British administrator and diplomatist: b. Burnfoot, Dumfriesshire, 2 May 1769; d. London, 30 May 1833.

Entering the service of the East India Company as an army officer in 1782, he rose to reach the rank of major general in 1822. In 1799 he was sent to Persia to negotiate a treaty of alliance against Napoleon, and he was ambassador to that country in 1800, 1807, and 1810. During 1804–1805, following the Second Mahratta War, he helped to restore order in Sindhia and Holkar; and in 1817 he was appointed political agent in the Deccan. From 1827 until his retirement in 1830 he served as governor of Bombay. He wrote several books on India, and *The History of Persia* (2 vols., 1815).

**MALCZEWSKI**, mal-chěf'skě, **Antoni**, Polish poet · b. Warsaw, 1793; d. there, May 2, 1826. After serving in the Polish army during 1811–1816 he traveled through Europe, at that period becoming a close friend of George Gordon Byron (q.v.). His principal work was the narrative poem *Marja* (1825), the literary merits of which were recognized only after his death. During his life none of his compositions brought him fame, and he died in wretched poverty.

**MALDEN**, māl'dēn, Mass., city in Middlesex County, on the Malden River 5 miles north of Boston; altitude 32 feet, it is served by the Boston and Maine Railroad. The city is both a residential suburb of Boston and an important manufacturing center, products including rubber shoes, shoe lasts and trees, women's and children's clothing, and leather goods. The public library, completed in 1885 to the designs of Henry Hobson Richardson (q.v.), houses a notable collection of paintings by French and American artists. The Bell Rock Memorial Park, with a Civil War soldiers' and sailors' monument, marks the site of the town bell of colonial times by which the townsfolk were called to worship or to fight fire. The Parsonage House, 1724, was the home of the Rev. Joseph Emerson, ancestor of Ralph Waldo Emerson and the birthplace of the Baptist missionary to Burma, Adoniram Judson. Michael Wigglesworth colonial poet and preacher, was pastor here for some 50 years (q.v.). The first settlement, about 1640, was made by persons moving out from Charlestown, which was expanding rapidly. They established homes along the Mystic River, of which the Malden is a branch, and called the place Mystic Side. In 1649 Malden became a separate municipality. Following its incorporation by the General Court, it had town government by a board of selectmen, until 1881, when it received a city charter. Since then the municipal government has been administered by a mayor with a bicameral body composed of a board of aldermen and a city council. Melrose was set off from Malden in 1850, and Everett in 1870. Pop. (1920) 49,103; (1930) 58,063; (1940) 58,010.

**MALDEN**, a South Pacific coral island 108 miles northwest of Starbuck Island and 275 miles southeast of Jarvis Island, within the jurisdiction of the high commissioner of the (British) Western Pacific Islands. The island, 35 square miles in extent, is uninhabited. There are remains of stone foundations for houses and temples which indicate that at one period the island was inhabited by Polynesians. No fresh water is now available, old wells having become salty or gone dry. During the 19th century extensive guano

deposits on Malden were worked by an Australian company.

**MALDIVE**, māl'div, **ISLANDS**, a chain of coral islands in the Indian Ocean 400 miles southwest of Ceylon, the archipelago constitutes a dependency of that British island colony. The Maldives comprise several hundred islets, of which 300 are inhabited, grouped in 17 atolls. The inhabitants, who according to the 1946 estimate numbered about 93,000, speak a dialect of Singhalese and are Mohammedan in religion. The capital of the dependency is on the island of Malé. A sultan (Lord of the Thousand Isles) is assisted by a People's Assembly, most members of which are elected. Dried fish, cowrie shells, coconut coir, and tortoise shell are the principal exports from the islands. The Maldivians are expert sailors and navigators, and carry on a considerable trade with India, Ceylon, and Sumatra. During the 16th century the Maldivians repelled numerous attempts by the Portuguese to establish a settlement on their islands. Subsequently they were attacked on many occasions by pirates from the Malabar coast of India, and as a consequence the Maldivians placed themselves under Singhalese protection in the 17th century. During World War II, a British naval port and airbase was constructed on the isolated atoll of Addu, southernmost of the Maldivian Islands. Consult Hockly, T. W., *A Short Account of the People, History, and Customs of the Maldive Archipelago* (London 1935).

**MALE FERN**. See **FERNS** AND **FERN-ALLIES**.

**MALEBRANCHE**, mal-bransh', **Nicholas de**, French metaphysician: b. Paris, Aug. 6, 1638; d. there, Oct. 13, 1715. He was the youngest child of Nicolas de Malebranche, secretary to Louis XIII, and Catherine de Lauzon, sister of a viceroy of Canada. In 1660, after studying theology at the Sorbonne, he entered the Congregation of the Oratory. He ranks second only to René Descartes (q.v.), greatest of French thinkers, in the history of French metaphysical speculation. The essence of his philosophy, which was founded upon that of Descartes, is a sort of mystical idealism. As set forth in Malebranche's brilliant work *Recherche de la vérité* (4 vols., 1674 ff.), we have cognizance of things and objective realities as subjective thoughts and feelings, through the idea which resides in our souls, but this idea is in God, so that we perceive everything in God (*vision en Dieu*) as the primal cause of all existences and things. Hence the famous doctrine of Occasionalism or Interference, in accordance with which the objective thing and the subjective impression are made on every occasion to coincide, by the direct interposition of God, in whom alone we think and feel. In the history of philosophy Malebranche may be styled the connecting link between Descartes and Baruch Spinoza (q.v.), the difference between his philosophy and that of the pantheist Spinoza consisting in the fact that to him the Universe was in God, and to Spinoza God was, in fact, in the Universe. Other works included *Traité de la nature et de la grâce* (1680); *Traité de la morale* (1683); *Entretiens sur la métaphysique et sur la religion* (1688); *Traité de l'amour de Dieu* (1697). Consult Ollé-Laprune, L., *La Philosophie de Malebranche* (2 vols., 1870); André, *La Vie du Révérend Père*

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**MALESHERBES, Chrétien Guillaume de Lamoignon de**, krā-tē-ān gē-yōm de la-moin-ōn de mal-ēs-ārb, French statesman: b. Paris, Dec 6, 1721; d. there, April 22, 1794. He was educated at the Jesuits' College, entered the legal profession and in 1745 became counsellor of the parlement of France; in 1750 he was president of the Court of Aids. He was broad-minded and liberal in his policy, favoring the publication of the 'Encyclopédie' and owing to his protestation against different measures of Louis XV was removed from office. Under Louis XVI he was Minister of the Interior, but resigned in 1776 and until the Revolution spent his time upon his estates and in travel, with the exception of 1787-88, when he was again Minister. At the outbreak of the Revolution he came loyally to the assistance of Louis XVI and was leading counsel in his defense. He remained with the monarch until almost the last and 11 months later was guillotined for treason. He was the author of essays and pamphlets on financial questions, etc.

**MALET, Claude François de**, klōd frañ-swa de ma-lā, French conspirator: b. Dôle, Franche-Comté, France, June 28, 1754; d. Paris, Oct 29, 1812. He entered the army in 1771 and became a brigadier-general in 1799. Suspected of conspiracy against Napoleon, he was dismissed from the army in 1807 and confined in La Force. While there he laid new plots and was thenceforward confined in a state prison from 1808 till 1812. During Napoleon's campaign in Russia Malet made his escape from prison on the night of October 22-23, and by circulating the false news of Napoleon's death won over some of the National Guards. While the latter secured the principal public offices in his name, Malet liberated his fellow conspirators, Generals Guidal and Lahorie, from prison. He was, however, himself taken prisoner by Laborde, chief of the military police of Paris, and was shot with his fellow conspirators.

**MALET, Lucas.** See HARRISON, MARY SAINT LEGER.

**MALFATH, Giovanni Francesco Giuseppe**, Italian mathematician: b. Ala di Trento, 1731; d. Ferrara, 1807. He was educated at the Jesuit College at Verona and later studied under Riccati at Bologna. For 30 years from 1771 he was professor of higher mathematics at Ferrara and attained high rank among the mathematicians of his time. He is best remembered for his publication of a mathematical problem known as "Malfath's problem," of which he gave the first solution. It was published in a memoir 'Tentativo per la risoluzione delle equazioni di quinto grado' (Pavia 1772).

**MALFORMATION IN PLANTS.** See PLANTS, MALFORMATION IN.

**MALHERBE, François de**, frañ-swā dē māl-ārb, French poet: b. Caen, France, 1555; d. Paris, Oct. 16, 1628. He was educated in Heidelberg and was engaged in the wars of the League. In 1605 he became court poet under Henry IV, but his work as a critic was of greater value than his poetry, which was lacking in poetic feeling and originality, though metrically perfect. He was the founder of the French school of classicism and must be cred-

ited with arousing a critical sense among the thinkers of France. His works consist of translations from the Latin and one volume of original verse. Consult Allais, 'Malherbe et la Poésie française à la fin du XVI. Siècle' (1892), Brunot, 'La Doctrine de Malherbe' (1891).

**MALIBRAN, Maria Félicité**, mezzo-soprano singer: b. Paris, 1808, d. Manchester, England, 1836. She was early trained for the operatic stage by her father, Manuel Garcia (q.v.), the Spanish tenor, and made her début in London (1825). She had lived in that city since 1817 as a teacher of singing, and her success in Rossini's 'Barber of Seville' was such that she was induced to follow her father to New York, where he had an engagement to establish grand opera. Here she married a French merchant named Malibran. She returned to the stage on her husband's failure in business, and in the spring of 1828 appeared on the Parisian boards in Rossini's 'Semiramis.' She subsequently was welcomed with great enthusiasm in London, Naples, Vienna, Milan and Venice, and traveled with the violinist de Bériot, whom she married shortly before her early death. She was a great actress as well as a marvelous songstress, and the irresistible charm of her person, added to the generosity of her mind and disposition, made her during her brief career one of the most fascinating operatic singers that had ever won the applause of the European public. In 1838 a statue was erected to her in Brussels, which had been her last place of residence. Consult Nathan, 'Life of Madame Maria Malibran de Bériot' (1846), Teneo, M., 'La Malibran, d'après des documents inédits' (in 'Sammelbände der internationalen Musik-Gesellschaft,' Leipzig 1906).

**MALIC ACID**, an organic acid discovered in 1785 by Scheele, and now known to be widely diffused throughout the vegetable kingdom, occurring sometimes in the free state, and sometimes in the form of its potassium, magnesium or calcium salts. It occurs abundantly, for example, in the gooseberry, cherry, strawberry and barberry, and also in unripe apples, from which latter fact it derives its name (Latin *malum*, an apple). It may be conveniently prepared by boiling the juice of mountain ashberries with enough milk of lime to almost neutralize it, and pouring the precipitate into boiling dilute nitric acid. Acid malate of calcium crystallizes from the nitric acid upon cooling, and this is dissolved in water, and precipitated by acetate of lead, the lead malate that is thrown down being subsequently decomposed by sulphuretted hydrogen gas. Malic acid has the formula  $C_4H_6O_5$  or  $C_2H_3(OH)(COOH)_2$ , is dibasic, and can be obtained in the form of colorless prisms or needles, which are hygroscopic, and dissolve readily in water and in alcohol. Malic acid kills algæ, and when present in a solution in any considerable amount it prevents the precipitation of cupric and ferric salts by the alkalis. With bases it forms compounds known as "malates," which are mostly soluble. See SUCCINIC ACID.

**MALICE**, *in law*, a premeditated or formed design to do mischief or injury to another, called also "malice prepense" or "aforethought." Blackstone says that malice prepense is not so properly spite or malevolence to the deceased

in particular, as any evil design in general; the dictate of a wicked, depraved and malignant heart, and it may be either express or implied in law. Express malice is when one, with a sedate, deliberate mind and formed design, doth kill another. In many cases where no malice is expressed, the law will imply it; as where a man wilfully poisons another, in such a deliberate act the law presumes malice, though no particular enmity can be proved. A spiteful, malignant, vindictive or revengeful disposition is apt to commit acts of malice both in the ordinary and the legal sense, and may be guilty in the former and not in the latter sense. An injurious act emanating from a weak mind, a lack of caution or a sudden, unaccountable impulse, may have all the force of ordinary malice, but in the absence of a designed, intentional injury, it will not come within the strict limits of criminal malice. The law infers an intent to kill from the deliberate use of a deadly weapon, and it has been held that a burglar intended murder when he broke into a dwelling because he would commit it if necessary to escape.

**MALICIOUS MISCHIEF**, in law, any injury done to the person or property of another with deliberate malice. This is an indictable offense both in Great Britain and the United States. The comprehensive English Black Act (so-called from its preamble that "several ill-designing and disorderly persons have of late associated themselves under the name of blacks") with others of a like kind were in 1861 codified (24 and 25 Vict. ch. 97) into an act which extends malicious mischief to buildings, fish ponds and other real estate, as well as to most classes of personal property. To constitute this offense, real not merely legal malice must be proved, such as is defined by Blackstone, "a spirit of wanton cruelty or black and diabolical revenge"; or, as defined by the Supreme Court of Massachusetts, "a spirit of cruelty, hostility or revenge." This spirit must be cherished by the offender not against a third party, but against the party whose person or property has been injured. Some States of the Union make secrecy a necessary element in the offense, others generalize the offense as implying merely the infliction of unlawful injury. If the injury was inflicted in the discharge of official duty, or under an honest sense of justification, this is sufficient defense to secure acquittal. The offense may be either a misdemeanor (q.v.) or a felony (q.v.) according to its circumstances. Consult Bishop, 'Commentaries on the Law of Statutory Crimes' (3d ed., Chicago 1901); McClain, 'Treatise on Criminal Law, as Now Administered in the United States' (Chicago 1897); and Harris, 'Principles of the Criminal Law' (London 1899).

**MALICIOUS PROSECUTION**, prosecution of a person unsuccessfully, maliciously and without cause. To constitute this offense it must be proved (1) That the prosecution averred to be malicious was instituted by the defendant named. (2) That it was decided against prosecutor. (3) That the suit was without probable cause. (4) That the motive was malice. (5) That the plaintiff was injured by such malicious prosecution.

*Quod facit per alium facit per se* is fully applicable to the defendant in a suit for mali-

cious prosecution; hence a corporation may be liable though they acted through their agent. (See TORT). Consult Newell, M. L., 'Malicious Prosecution, False Imprisonment and Abuse of Process' (Chicago 1892).

**MALIGI**, ma-lē-hē', Philippines, an island lying southeast of Talim Island in the Bay Lagoon (q.v.); it is the seat of the United States military prisons.

**MALIGNANT PUSTULE**. See ANTHRAX.

**MALIGNANTS**, in English history, a name applied in 1643 by members of Parliament to designate those whom they considered to be the evil advisers of Charles I. Afterward the name was extended to all who sided with the king against the Parliament.

**MALINAO**, ma-lē'now, Philippines, (1) a pueblo of the province of Albay, Luzon, situated on the Lagonoy Gulf, 18 miles north by west of Albay, the provincial capital, and three miles north of Tabaco. It is on the main road, and is the shipping point for the large hemp product of the surrounding region. There is an extinct volcano nearby and also mineral springs. Pop 12,437.

**MALINES**, ma-lēn. See MECHLIN.

**MALINGERING**, ma-ling'gar-ing, a term denoting feigning disease on the part of a soldier, sailor, prisoner, etc., in order to obtain discharge from service, or escape from duty or labor. It implies some overt act, such as the previous application of a ligature, or the taking of some drug, which produced the appearance of the disease said to exist. A worse form of the same crime, "wilfully maiming," is erroneously called malingering. Consult Callie, John, 'Malingering and Feigned Sickness' (New York 1913); and Smith, W. R., 'Medical Jurisprudence' (London 1913).

**MALL**, Franklin Paine, American anatomist: b. Belle Plaine, Iowa, 1862; d. Nov. 17, 1917. He took his M.D. at Michigan in 1883, later studied at Heidelberg and Leipzig and in 1886-88 was a Fellow at Johns Hopkins, acting as instructor in pathology at that institution 1888-89. He was adjunct professor of vertebrate anatomy at Clark University in 1889-92, and was professor of anatomy at the University of Chicago in 1892-93. He was professor of anatomy at Johns Hopkins University after 1893 and after 1915 also served as director of the department of embryology at Carnegie Institute, Washington, D. C. He was a trustee of the Marine Biological Laboratory, Woods' Hole, Mass., and wrote extensively for scientific publications.

**MALL**, māl or mēl, The, (1) a promenade in Central Park, New York, regarded as one of the most successful landscape effects in the United States. (2) An avenue in London, on the north of Saint James Park.

**MALLALIEU**, māl-la-lū', Willard Francis, American Methodist bishop: b. Sutton, Mass., Dec. 11, 1828; d. 1911. He was graduated from Wesleyan University in 1857 and became a Methodist Episcopal clergyman in 1858. He held many important charges and in 1872, 1876, 1880 and 1884 was a member of the general conferences. He was presiding elder of the district of Boston in 1882-84 and in 1884 was

elected bishop. He retired in 1904. He published 'The Why, the When, and How of Revivals' (1901); 'The Fullness of the Blessing of the Gospel of Christ' (1903); 'Words of Cheer and Comfort' (1907).

**MALLARD.** See DUCK.

**MALLARMÉ, Stéphane**, stā-fān māl-ār-mā, French poet. b. Paris, March 18, 1842, d. Valvins, Fontainebleau, Sept. 9, 1898. Most of his life was passed as an instructor in English at the Lycée Fontanes of Paris. He is known as the founder of the curious poetic school of the "Décadents," in whose organ, *Le Décadent*, as well as in *Le Parnasse Contemporain*, he published much. Incomprehensibility appears to have been the object of his study, and he entirely attained it in his preface to an edition (1880) of Beckford's 'Vathek'. Others of his works are 'L'Après-midi d'un faune' (1876); 'Petite Mythologie' (1878); 'Les Dieux antiques' (1880); 'Poésies' (1887), a translation of Poe's poems (1888), perhaps his most satisfactory performance; and 'Vers et prose' (1893).

**MALLEABILITY**, in metallurgy, the property of extending under the blow of a hammer. For every metal there is a temperature of greatest malleability. The following is the order of malleability of the metals: Gold, silver, copper, platinum, iron, aluminum, tin, zinc, lead.

**MALLEABLE GLASS.** See GLASS, CHEMICAL PROPERTIES OF.

**MALLECO**, māl-yā'kō, formerly a province of Chile, now divided between Bio-bio and Cautin. Its area was 3,303 square miles, and its capital city was Angol. The country is mountainous and well wooded in the eastern and western parts. About one-half of the population is composed of Indians of the Arauco tribe. Wheat is the staple agricultural product of the country. The other industries of importance are cattle raising, timber cutting and mining. The population was about 120,000.

**MALLEE-BIRD**, or **MALEO**, a name for the Australian mound-bird (q.v.), derived from a native language.

**MALLERY, Garrick**, American ethnologist: b. Wilkesbarre, Pa., April 23, 1831, d. Washington, D. C., Oct. 24, 1894. He was graduated from Yale College in 1850 and was admitted to the bar in 1853, he practised law in Philadelphia until 1861, when he enlisted and served through the war in the Federal army, attaining the rank of lieutenant-colonel. He was executive officer of the Signal Service Bureau until 1876, when he was engaged in a geological survey in Dakota, and in 1879 was retired from the army and appointed chief of the bureau of ethnology. Among his books are 'A Calendar of the Dakota Nation' (1877); 'Israelite and Indian, a Parallel in Planes of Culture' (1889); 'Greeting by Gesture' (1891); 'Picture Writing of the American Indians' (1893), etc.

**MALLESON, George Bruce**, English soldier and historical writer: b. London, May 8, 1825; d. there, Feb. 28, 1898. He was educated at Winchester College, and from 1842 till 1877 served in India, at first in the army, and subsequently in government posts. His chief work,

'History of the Indian Mutiny' (1878-80) commenced where the second volume of Kaye's 'Sepoy War' left off, and in 1890 there appeared a joint edition of the two histories in six volumes, the third volume of Kaye's work being omitted and a new sixth one added. Other works by him are 'The Mutiny of the Bengal Army' (1857); 'History of the French in India' (1868); 'Sketch of the Native States of India' (1875); 'Final French Struggles in India and Indian Seas' (1878); 'History of Afghanistan' (1879); 'The Decisive Battles of India' (1883), and lives of 'Clive'; 'Eugene of Savoy'; 'Prince Metternich'; 'Wellesley'; 'Dupleix'; 'Akbar' and 'Warren Hastings'.

**MALLET, John William**, American chemist: b. Dublin, Ireland, Oct. 10, 1832; d. 1912. He was educated at Trinity College, Dublin, and at Gottingen, and emigrating to the United States in 1853 became assistant professor in chemistry at Amherst 1854-56 and later chemist to the United States geological survey of Alabama. In 1856-60 he was professor of chemistry at the University of Alabama. He entered the service of the Confederacy and was paroled in 1865 as lieutenant-colonel of artillery. The chair of sciences at the University of Louisiana was occupied by him in 1865-68 and after 1868 he was professor of chemistry in the University of Virginia, becoming professor emeritus in 1908. He contributed valuable scientific articles to the leading chemical periodicals and published 'Cotton' (1862); 'Chemistry Applied to the Arts' (1868); 'Syllabus of a Course of Lectures on General Chemistry' (1890; rev. ed., 1901).

**MALLET**, a wooden hammer used in carpentry and also in the game of croquet (q.v.). The gavel is a variety of mallet. Various small mallets are used by gold beaters, jewelers, dentists and other artisans.

**MALIAN, mā-yān', Julien de**, West Indian dramatist: b. Le Moule, Guadeloupe, 1805; d. Paris, France, 1851. He gained wide reputation as a writer of comedies and dramas, many of which have been presented on the metropolitan stage. The most popular are 'Two Roses' (1831), a historical drama of the civil wars in England; 'The Carpenter' (1831), a comedy; and 'The Wandering Jew' (1834).

**MALLOCK, William Hurrell**, English author: b. Devonshire, 1849; d. April 2, 1923. He was graduated from Balliol College, Oxford, and won the Newdigate prize in 1872. He never entered a profession but devoted himself entirely to literary work. His philosophical and sociological writings include 'Is Life Worth Living?' (1879); 'Social Equality, a Study in a Missing Science' (1882); 'Atheism and the Value of Life' (1884); 'Property and Progress' (1884); 'Labour and the Popular Welfare' (1893); 'Studies of Contemporary Superstition' (1895); 'Classes and Masses' (1896); 'Aristocracy and Evolution' (1898); 'Doctrine and Doctrinal Disruption' (1900); 'Religion as a Credible Doctrine' (1902); 'The Reconstruction of Belief' (1905); 'The Nation as a Business Firm,' and 'Social Reform' (1914). He also wrote several works of fiction, most of which deal with the same social and religious problems as the above works, including 'The New Republic' (1877), in which he introduced many



well-known contemporaries under thin disguises; 'A Romance of the Nineteenth Century' (1881, new ed., 1894), 'The Old Order Changes' (1886), 'A Human Document' (1892); 'The Heart of Life' (1895), and 'The Individualist' (1899), and published two volumes of verse, 'The Veil of the Temple' (1904); a translation of Lucretius 'On Life and Death' (1878), and 'An Immortal Soul' (1908). His philosophical works deal with the fundamentals of religion, arguing for supernaturalism and aiming to show that science alone supplies no basis for religious belief; in his political and economic writings, he attacked the radical and socialistic theories and tendencies of the age. In 1916 he was awarded a Civil List pension.

**MALLOPHAGA**, a name used for an extensive and varied assembly of feather-eating and hair-eating bugs, usually called lice. They are very small, oval, delicate and of swift motion; of light-brown color, some with shovel-shaped heads, others with horn-like appendages on the head. One delicate kind vexes the canary, gluing eggs to its feathers and in the cracks of its perch. *Goniocotes* is a large form, a tenth of an inch long, with bristled and shield-like head, and is one of the pests of domestic fowls. One species, colored with bands of yellow and brown, infests the turkey and the peacock. Another great family, *Liotheida*, contains species which resemble white ants and preys upon the feathers of falcons and of wading birds. *Gyropus* infests guinea-pigs, massing thickly about their neck and ears.

**MALLORY**, Stephen Russell, American lawyer: b. Trinidad, West Indies, 1813; d. Pensacola, Fla., Nov. 9, 1873. His parents removed with him to the United States in 1820 and he was educated in Mobile and in Nazareth, Pa. He studied law and was admitted to the bar in 1839; he was United States senator 1851-57 and in 1861 entered the service of the Confederate States as secretary of a navy not in existence. He was arrested at the close of the war and held for 10 months, after which he returned to Pensacola and was until his death engaged in law practice.

**MALLOW**, a genus of herbs (*Malva*), of the family *Malvaceae*. The species, of which there are less than a score, are widely scattered and are characterized by angled, lobed or dissected leaves and solitary or clustered axillary flowers. They include four species cultivated in America and one very well-known weed, *M. rotundifolia*, popularly known among children as "cheese-plant" because of the shape of the fruits, which also suggested another popular name, "shirt-button plant." The plant is a perennial, very persistent of life and rather difficult to eradicate except by constant clean cultivation. Musk-mallow (*M. moschata*) is cultivated for its large, showy pink or white flowers; *M. alcea* is also popular. *M. crispa* furnishes a useful fibre, as probably other species could be made to do. Its leaves are often used for garnishing but are not eaten. This species and *M. sylvestris* are frequently seen in old gardens and in their vicinity as escaped plants, but are not offered for sale by seedsmen. The name mallow is loosely applied to many plants of the mallow family, but not of the genus *Malva*; for instance, marsh-mallow (*Althæa*

*officinalis*), rose-mallow (*Hibiscus moscheutos*) and Indian mallow (*Abutilon abutilon*); also, more loosely still, to unrelated plants, as Jew's mallow (*Corchorus olitorius* or *C. capsularis*). See CORCHORUS, HOLLYHOCK, HIBISCUS.

**MALMAISON**, mal-mā-zōn, a celebrated French château on the Seine, 10 miles west of Paris. It was the favorite residence of Josephine, wife of Napoleon I, and here she died. The château belonged to Richelieu, and was restored in 1861 by Napoleon III. In 1870 a sortie by Ducrot from Paris was repulsed here by the Germans.

**MALMÉDY**, a town in the province of Liège, Belgium. In 1814-15 the district was ceded to Prussia, and it became a German military base. From it a number of strategic railway lines radiated toward Belgium. By the Treaty of Versailles, the districts of Malmédy and Eupen were ceded to Belgium, provided that their inhabitants expressed in writing, during the first six months after the treaty came into force, their desire to be joined to Belgium. This they did almost unanimously, and in September 1920 the transfer was recognized as definitive. By a decree of March 6, 1925 Eupen and Malmédy became cantons in the province of Liège. Malmédy has important industries, including tanning, dyeing and papermaking establishments. Pop. about 5,000.

**MALMESBURY**, William of. See WILLIAM OF MALMSBURY.

**MALMSBURY**, England, market town and municipal borough, Wiltshire, 94 miles west of London, on the Great Western Railway. It is built on a ridge of land almost surrounded by the river Avon and one of its small tributaries. Its site was chosen by a Scottish or Irish monk named Maildolphus for a hermitage in 635. He later gathered a colony of disciples about him, one of whom, Adhelm, became abbot of the abbey founded there, ruins of which still remain. Athelstan rebuilt the monastery and is buried there. The town grew around the abbey, but was not incorporated until 1645, the charter then granted remaining in force until 1885. The modern town has a considerable agricultural trade, manufactures silk and pillow lace, and has tanneries and breweries. Two miles distant is the manor-house of Sir Lawrence Washington, and the church at Gardson where many members of the Washington family are buried. Pop. 2,500.

**MALMIGNATTE**, mäl-mī-nyät', a spider. See LATRODECTUS.

**MALMÖ**, mäl'më, Sweden, a seaport and the third largest town of the country, on the Sound, almost opposite Copenhagen, 17 miles distant, with which it has steam-ferry communication, a channel being maintained in winter by an ice-breaker. Malmö is a busy industrial centre with important manufactures, is the terminus of several railroads and is 384 miles by rail southwest of Stockholm. The town and its harbor have been considerably improved and modernized, and an extensive export and import trade is carried on. Malmö dates from the 12th century, but until 1500 it was little more than a poor fishing village. It again suffered a period of decline but revived after the improvements to the harbor effected in 1775. Pop. 118,000. It has an interesting city hall, Saint

Peter's Gothic Church and an ancient castle. The industries include iron works and foundries, manufacture of railroad cars, shoes, gloves, tobacco, chocolate, etc.

**MALMSEY**, mǎm'zī or mǎlm'sī, a sweet wine, made from a grape grown on rocky ground, in Madeira, exposed to the full influence of the sun, and not gathered until partially withered.

**MALOLOS**, mā-lō'lōs, Philippines, a pueblo and the capital of the province of Bulacán, Luzon, situated at the head of one of the inlets of the Pampanga River delta, five miles northwest of Bulacán, the former capital. It is a telegraph and military station, is near a station of the Manila-Dagupan Railroad and is the centre of an important trade. It is in a region which was a stronghold of the insurgents, and immediately after the close of the Spanish war was made the capital of the insurgent government. Rice is extensively cultivated in the vicinity. Pop. 12,575

**MALON**, mal'on, Benoît, French Socialist: b. near Sainte-Etienne in the department of Loire, June 23, 1841; d. Asnières, Sept 13, 1893. He early entered upon a journalistic career and his activities in behalf of Socialistic agitations caused his enforced absence from France for a time preceding 1880. He then founded the *Revue Socialiste* which he edited until his death. He attained considerable influence through the breadth of his teachings, which advocated the necessity for an inclusion of certain high religious, ethical and moral considerations with the socialistic principles of government. Author of 'L'Internationale, son histoire et ses principes' (1872); 'Histoire du Socialisme et des prolétaires' (1881-84); 'Le socialisme intégral' (1890-91), etc.

**MALONE**, ma'lōni, Edmund, Irish Shakespearean scholar: b. Dublin, Oct. 4, 1741, d. London, April 25, 1812. He was educated at Trinity College, Dublin, and was called to the Irish bar in 1767, but henceforth devoted himself entirely to literary pursuits. His most important and permanent critical works are 'Attempt to Ascertain the Order in Which the Plays of Shakespeare Were Written' (1778), which still carries authority; his edition of the poet in 10 volumes; and the edition known as the Third Variorum, which was prepared after his death by James Boswell, the younger, out of material left by the critic, and published in 21 volumes. This last is still the best of all complete critical editions. He also published 'Remarks on the Rowley (Chatterton) Controversy'; 'An Inquiry into the Ireland Shakespearean Forgeries'; and biographical memoirs of Sir Joshua Reynolds, Dryden, W. Gerard Hamilton, etc. Consult Prior, James, 'Life of Edmund Malone' (London 1864); Leslie and Taylor, 'Life of Sir Joshua Reynolds' (ib. 1865) and Boswell, James, 'Life of Johnson,' edited by G. B. Hill (Oxford 1887).

**MALONE**, Walter, American poet and jurist: b. Desoto County, Miss., Feb. 10, 1866; d. Memphis, May 18, 1915. He was graduated at the University of Mississippi and subsequently engaged in the practice of law and in literary work. He contributed to the periodicals of the day and published 'Claribel and other poems' (1882); 'The Outcast' (1886); 'Narcissus' (1893); 'Dusk and Dawn' (1895); 'De-

cember and June' (1896); 'Coming of the King' (1897); 'Songs of North and South' (1900), 'Poems' (1904), 'Songs of East and West' (1906); 'Hernando DeSoto,' an epic poem highly praised (1914).

On March 29, 1905, on petition of practically all members of the Memphis bar, he was appointed judge of the Circuit Court of Shelby County and held the position until his death. An association composed of members of many States has been formed to erect a bronze portrait statue to Walter Malone in the principal park of Memphis, while another association has for its object to have his "Opportunity" cast into a bronze tablet to be erected in Court square, in the heart of Memphis.

**MALONE**, N. Y., village and Franklin County seat, alt. 730 feet; on the Salmon River; and on the New York Central, and the Rutland railroads, 167m. NE of Utica. It has an airport. Situated 12 miles from the boundary between the United States and Canada, Malone is a port of entry for the seventh customs district.

Lying in the northern foothills of the Adirondack Mountains, the town is surrounded by a fertile agricultural area raising hops, hay, potatoes, and has dairy products. Considerable lumbering is also carried on. A large tract of woodland near by was burned over in the early 1900's, and, as a part of the Adirondack State Park, has been reforested. Mineral resources of the region remain to be developed. Industrially, Malone has had a varied list of products. Paper milling was at one time the chief dependence of the village; now other manufactures include shoes, slippers and moccasins, bronze and aluminum powder, and woolen clothing. There are lumber mills, tanneries, foundry and machine shops, and railroad repair shops. Hydroelectric plants line the river. The mills and lumber camps employ many French-Canadians. In most of the homes in the village, both English and French are spoken. This French-Canadian element is an important factor in the industrial population of northern New York, as in northern New England.

Malone has good schools, parks, playgrounds, and facilities for recreation. The northern New York Institution for Deaf Mutes is located here. The Wead Library is handsomely housed, and the county historical society maintains a library and a museum. There are many points of historical interest. The home of William Almon Wheeler (q.v.) is now the Elks Club. The home of the founder of the village, Richard Harrison, was used during the War of 1812 as headquarters for Gen. James Wilkinson (q.v.); this was in 1813, when Wilkinson was ordered to the frontier and failed to carry out plans for a campaign in Canada. Arsenal Green was a parade ground in the War of 1812 and was occupied by British troops during the brief period when the village was held by them. The federal building, the courthouse, and old Franklin Academy are notable.

Malone was first settled in 1802 by a group of Vermonters, one of whom selected the name in honor of Edmund Malone (q.v.), an Irish Shakespearean scholar. The village was incorporated in 1833. From its earliest days Malone had a strong Irish element, and in 1866 the village was selected by the Fenians (q.v.) as a base for an invasion of Canada. They did ac-

tually cross the border, but, after an encounter with Canadian troops, they returned to Malone and disbanded. The village is governed by a mayor and council. Pop (1930) 8,657; (1940) 8,743.

**MALOO CLIMBER.** See **BAUHINIA**.

**MALORY, Sir Thomas**, author of the English prose romance "Morte d'Arthur." The work was finished in the ninth year of Edward IV's reign, 1470, and published by Caxton in black-letter folio, in 1485. Little is known of the author, he may have been a priest, Caxton calls him "a servant of Jesus both day and night," and priests frequently were accorded the title "Sir." Probably he was a Welshman. See **ARTHURIAN ROMANCES**; **MORTE D'ARTHUR**; **GRAIL, THE HOLY, LANCELOT OF THE LAKE**; **MERLIN**; **TRISTAN**.

**MALOT, ma-lô, Hector Henri**, French novelist. b. La Bouille, near Rouen, France, May 20, 1830; d. Vincennes, July 18, 1907. He studied law, but abandoned it for a literary career, and in 1859 issued the first of a long series of successful novels. He was for a time newspaper correspondent in London, and literary critic of *L'Opinion Nationale*. He wrote "Victimes d'amour" (1859); "Sans famille," published in English as "No Relations" (1878); "Conscience" (1888); "Complices" (1893); "En famille" (1893); "Amours de jeune, Amours de vieux" (1896); an autobiography, "Le Roman de mes Romans" (1896).

**MALPIGHI, mål-pé'gê, Marcello**, Italian anatomist: b. Crevalcuore, Italy, March 10, 1628; d. Rome, Nov. 29, 1694. He received a medical education in Bologna and was granted a doctor's degree in 1653. In 1656 he became professor of medicine at Pisa, where he formed a friendship with the mathematician Borelli, who encouraged him to proceed with researches in anatomy. His health failing he returned to Bologna and continued his investigations, which resulted in discoveries which established facts undisputed in the modern world of science and placed the world's knowledge of physiology on a new footing; his researches in botany and entomology were highly important. In 1691 he was summoned to Rome as first physician to Innocent XII, in which office he died. He published numerous scientific works of great value, a complete edition of which was published in Venice 1743. The principal of these are "Observationes Anatomicæ" (1661) and "Epistolæ Anatomicæ" (1665).

**MALPLAQUET, mål-plā-kā, Battle of**, the bloodiest in the war of the Spanish Succession, gained by Marlborough and Eugène, the commanders of the allies, against the French under Villars, Sept. 11, 1709. The French lost 10,000; the allies more than 20,000. Malplaquet is a village in the department of the Nord, near the Belgium frontier, 20 miles east of Valenciennes. After the victory there the allied armies soon took Mons and Douai.

**MALSTROM.** See **MAELSTROM**.

**MALT AND MALTING.** See **BREWING AND MALTING**.

**MALSTATT-BURBACH**, Prussia, town in the Rhine province, on the Saar and opposite Saarbrücken. It is situated in a coal-mining

district and is almost entirely given over to factories and workmen's dwellings. There are manufacturing of iron, steel and cement, machinery, boilers and safes. It has a large wharf for handling the exports of coal. Malstatt received municipal rights in 1321, but these were later surrendered. The town began to grow in middle of the 19th century and in 1874 it joined with Burbach to form a city. Pop about 38,554.

**MALT REFUSE, MALT SPROUTS.** See **NUTRITION OF FARM ANIMALS**.

**MALTA, mål'ta**, an island in the Mediterranean, belonging to Great Britain, with its dependencies, Gozo, Comino and Cominetto, forming the elevated portions of the plateau that extends northwestward to Sicily, 62 miles, and southward to Africa, 197 miles, and divides the Mediterranean into two basins. The Maltese group has a total area of 122 square miles, of which 95 square miles belong to Malta. Malta is of irregular oval shape, 17 miles long, with a central breadth of nine miles, its greatest elevation is over 750 feet. It is of limestone formation, and is deeply indented on all sides except the south, where the coast forms a continuous and almost unbroken line. Of great strategical importance, it is very strongly fortified, especially Baletta, the capital, which is the headquarters of the British Mediterranean fleet and the principal naval and mercantile coaling station in the Mediterranean. During the World War of 1914-18 it was one of the most important of British naval stations and in the war that began in 1939 it was repeatedly bombed by German and Italian aircraft. It served as a British air base for attacks on Italian Libya and Sicilian air fields. The climate is sultry in summer and somewhat enervating when under the influence of the humid sirocco blowing from Africa, but generally is mild and healthful. There are only a few small streams, but the springs are so numerous and copious that no deficiency of water is felt, and since 1880 an extensive system of waterworks has greatly improved sanitary conditions. Malta has a bare, stony appearance owing to the absence of trees. The soil is thin but remarkably fertile; and its fertility is increased by the skillful cultivation and the diligent toil of the inhabitants. Large crops of wheat and potatoes are raised, early varieties of the latter being largely exported to England; maize, barley, cotton, cloves, oranges, figs, grapes, carob beans and peaches and other fruits are also grown. Filigree ornaments and a little cotton are manufactured. Sheep and goats are kept, with smaller numbers of cattle, mules, asses and horses. The language of the people is a dialect of Semitic origin derived from the Carthaginian and Arabic tongues, with a strong admixture of Italian. The native population believes themselves to be of Phœnician descent. English and Maltese are the official languages. English is used for all administrative purposes; Maltese is used in the courts of law, having been substituted for Italian in 1934. The executive head of Malta is a governor, who is also commander-in-chief of the island. On Feb. 26, 1939, Malta was granted a new constitution under letters patent dated February 14. It provides for a Council of Government, composed of eight official members, two unofficial members nominated by the governor, and 10 elected mem-

bers. The governor presides over the Council, with a casting vote but no original vote. Ecclesiastics are precluded from membership. Malta is of great historical, archaeological and architectural interest. It was in St Paul's Bay that the Apostle Paul is now generally believed to have been shipwrecked in 58 A.D. (Acts xxvii and xxviii). The island was held in turn by the Phoenicians, the Greeks, the Carthaginians, and the Romans. It was conquered by the Arabs in 870 A.D., and was attached to Sicily from 1090 until 1530, when the Emperor Charles V turned it over to the Knights of St. John, who distinguished themselves during succeeding centuries by their bold defense of Christianity against Moslemism, especially during the siege of 1565. As the Knights of St. John of Malta they became famous throughout the civilized world. They ruled the island until they were dispersed by Napoleon in 1798. Thereafter the Maltese rebelled against the French, and aided Great Britain when her fleet blockaded the island, 1798-1800. At the request of the inhabitants Britain made the island a protectorate, and it was formally annexed to the British Crown by the Treaty of Paris in 1814. It is one of the most important ports of call in the world. Consult Gatt Rutter, J., "Malta" (1936); Porter, W., "A History of the Knights of Malta" (1883); Zammit, Th., "Malta The Islands and Their History" (1926).

**MALTA FEVER** or **UNDULANT FEVER**, a disease closely related to, if not identical with, the livestock malady known as Bang's disease or infectious abortion, and first described by Hippocrates nearly 2,300 years ago. Highly prevalent in the Mediterranean area, especially on the Island of Malta, it has spread from there throughout the world. Various known as Malta fever, Mediterranean fever, Neapolitan fever, etc., more recently it was given the name "Undulant Fever" because the attacks come in waves or undulations. The symptoms are characteristic, the fever being accompanied by intense pain, enlargement of the spleen, swelling of the joints, excessive perspiration, etc. The fever may last for but a few days, a few weeks, or it may continue for months, then disappear only to reappear after an indefinite period. The patient may be ill for two or three years before any definite improvement is noted. The mortality rate, however, is low. The causative agent was isolated by Dr. David Bruce, a British army surgeon, in 1887, from human beings who had succumbed to the disease on the Island of Malta. He called the germ *Micrococcus melitensis*. Later it was discovered that the germ invaded goats, and that humans commonly acquired it by drinking the milk of infected goats. It was brought to the United States a number of years ago when Southwestern ranchers imported large numbers of goats from Malta. It has since been learned that the germ invades cattle and swine, and most of the cases developing in the United States have been traced to the drinking of milk of infected cows. Professor Bang isolated the germ of the abortion disease in 1897, and in 1918 Miss Alice C. Evans of the U. S. Department of Agriculture discovered the similarity or close relationship between the germs isolated by Bruce and by Bang. See also **BANG'S DISEASE**.

**MALTA, Knights of.** See **JOHN, ORDER OF SAINT**

**MALTE-BRUN**, mal'té-broon (Fr. málte-brün), **Conrad** (properly **MALTHE BRUNN**), Danish geographer b. Thisted, Jutland, Aug. 12, 1775, d. Paris, Dec. 14, 1826. He devoted himself to literature and politics in Copenhagen, but having given offense by writing in favor of the liberty of the press and the enfranchisement of the peasants, was banished to Sweden in 1800. He went later to Paris, where he became famous as a geographer. He edited the foreign political department of the *Journal des Debats*, but is best known for his "Summary of Universal Geography" (8 vols., 1810-29). The first six volumes only were completed by Malte-Brun. Among his other works are "Ancient and Modern Poland"; "History of Travel," and "Mathematical, Physical and Political Geography."

**MALTESE** (mál-tēs' or -tēz') **CROSS.** See **CROSS**.

**MALTESE DOG.** See **DOG**.

**MALTHA**, (1) according to Pliny, a name used for an inflammable mud which flowed from a pool at Samosata, Commagene, North Syria, and resembled naphtha. (2) A mixture of wax and pitch for caulking ships; mineral tar is another name for maltha, which is found oozing from rocks in certain localities, particularly in California.

**MALTHUS**, Thomas Robert, English political economist b. near Guildford, Surrey, Feb. 14, 1766, d. Bath, Dec. 29, 1834. He studied theology at Cambridge and was ordained in the Church of England, continuing to pursue his profession as a teacher while holding a small living in Surrey. In 1805 he was appointed professor of history and political economy at Haileybury College. In his famous "Essay on the Principles of Population" he propounded (1798) what is known as the Malthusian Doctrine, namely, that the increase of population advances at a geometrical, the increase of the means of life at an arithmetical, ratio; that this condition of things renders the condition of the poor more and more hopeless, that unless famine or war interfere to diminish population the means of life will eventually prove inadequate, that discouragement of early and improvident marriages and the cultivation of self-restraint must be employed to avert the danger. These positions have been the subject of long and widespread discussion. His other writings include "An Inquiry into the Nature and Progress of Rent" (1815), "Principles of Political Economy" (1826); "Definitions in Political Economy" (1827). Consult Bonar, "Malthus and His Work" (1885); Soetbeer, "Die Stellung der Sozialisten zur malthusischen Bevölkerungstheorie" (1886); Molinari, "Malthus, Essai sur le Principe de Population" (1889); Cossa, "Il principio di popolazione di T. R. Malthus" (1895). See **ECONOMICS**.

**MALUS**, Etienne Louis, ä-tē-ën loo-ë mä-lüs, French physicist and military engineer: b. Paris, June 23, 1775, d. there, Feb. 23, 1812. He was educated at the École Polytechnique, and upon leaving the school received a captain's commission in the corps of engineers, and served during the campaign of 1797 with the army of the Sambre and Meuse. Subsequently he participated in the campaign in Egypt, and in 1804 superintended the construction of forti-

fications at Antwerp and Strassburg. Whatever time could be spared from his professional labors was devoted to scientific pursuits. His chief publications consist of a mathematical 'Traité d'Optique,' first published in the 'Mémoires présentés à l'Institut' in 1810, in which he promulgated some valuable discoveries respecting the refraction of light in transparent media; and the 'Theory of Double Refraction' (Mémoires présentés à l'Institut, Vol. II), containing an account of his discoveries respecting the polarization of light, which consisted in showing that light may acquire properties identical with either of two rays yielded by refraction through Iceland spar by the process of simple reflection at a particular angle from any transparent body. This discovery gained for its author his election to the Institute and the biennial medal of the Royal Society of London. He also published an 'Essay on the Measurement of the Refractive Force of Opaque Bodies.'

**MALVACEÆ**, a family of flowering plants, the mallows and their allies, in the order *Columnifera*, with the calyx gamosepalous, petals contorted in a bud, stamens numerous, monadelphous; anthers extrorse, monotheceous; pollen-grains spiny. They are herbaceous or woody plants, mucilaginous in their juices, and usually densely hairy, especially when young. The leaves are palmately nerved and frequently deeply five-lobed. The flowers are large, funnel-shaped, conspicuously and beautifully colored, attracting the aid of insects in fertilization. The fruit is schizocarpous. This family contains many important genera and species of plants elsewhere described, such as the mallows (*Malva*, *Lavatera*, etc.), hollyhocks (*Althæa*), cotton-plants (*Gossypium*), the rose-mallows (*Hibiscus*), etc. About 60 genera and 900 species are accredited to this family by systematic botanists.

**MALVERN**, mál-vèrn, Ark., town and Hot Spring County seat; alt. 315 feet; 43m. SW. of Little Rock, and 22m. SE. of Hot Springs, on Missouri Pacific; and Rock Island railroads. It is in a timber, mineral, and farm area, producing lumber, cotton, clays, barite, titanium ore, and marble. It has a titanium ore processing plant, shoe factory, and wood products mills. Incorporated in 1872. Pop. (1940) 5,290.

**MALVERN**, mál'vern, Great, England, a fashionable inland watering-place in Worcestershire, on the east side of the Malvern Hills, at the foot of the Worcestershire Beacon, 1,395 feet high, the summit of which commands magnificent views. A restored 11th century priory church and Malvern College are the chief edifices. Malvern is widely celebrated and greatly frequented owing to its salubrious climate and the efficacy of its mineral springs. Pop. of urban district about 17,000.

**MALVERN HILL**, Battle of. After the close of the battle of Glendale (q.v.), June 30, 1862, the Army of the Potomac was put in position on Malvern Hill, an elevated open plateau on the left bank of James River, 60 feet high, and about 1½ miles by ½ mile in area. On this plateau the army was disposed in a large arc, both flanks resting on the river and protected by gunboats. Porter's Fifth corps was on the left, Couch's division of Keyes' corps

on the right of Porter, Heintzelman's two divisions—Kearny and Hooker—on the right of Couch, Sumner's corps on the right of Heintzelman, and Franklin's corps on the right of Sumner. Peck's division of Keyes' corps was on the right of Franklin and was the extreme right of the army, and it and the left of Porter's line stood back to back. There were numerous batteries of artillery along and in rear of the line. The position was a very strong one. The Confederate D. H. Hill says: "Tier after tier of batteries were grimly visible on the plateau rising in the form of an amphitheatre." The approach to the position was over 400 to 500 yards of open ground swept by artillery fire. When it was discovered early in the morning of July 1 that McClellan had fallen back from Glendale during the night, Lee gave orders for immediate pursuit. Jackson marched by the Willis road, and when in sight of Malvern Hill he formed line, with Whiting's division on his left and D. H. Hill's on his right, one of Ewell's brigades occupying the interval. The rest of Ewell's division and Jackson's own division were held in reserve. Magruder was directed to take position on Jackson's right, but before his arrival two of Huger's brigades came up and were placed next to Hill. The Confederates felt the Union lines with infantry and artillery, and when Magruder came up, about 2 p.m. Huger's two brigades—Armistead and Wright—with four batteries, were ordered forward. The batteries, as they emerged in succession from the woods, were promptly knocked to pieces by the fire of over 60 guns brought to bear upon them, and the two brigades were repulsed with loss. This attack fell upon the right of Porter and left of Couch, and the latter was now reinforced by Caldwell's brigade of Sumner's corps. No serious advance had been made on other parts of the line, but Hill had suffered severely from artillery fire in getting his troops in position opposite Couch's right. At 5:30 p.m. Magruder assaulted Porter's line and the left of Couch with the five brigades of Armistead, Cobb, Wright, Mahone and Barksdale. All were met by such a terrific fire of artillery and musketry, which swept the slope of the hill, that they could make no headway, though gaining temporary advantages, and fell back with great loss. Toombs', G. T. Anderson's and Ransom's brigades were now ordered in; Toombs got lost in the thick woods; Anderson and Ransom shared the fate of those preceding them, and fell back. Magruder's fight ended before dark. While Magruder was thus engaged with Porter and the left of Couch, D. H. Hill, on his left, advanced against Couch's right, which, as the action progressed, was reinforced by Caldwell's brigade, three regiments of Hooker's division under Sickles and some of Kearny's division. Hill's five brigades were commanded by Generals Garland and Ripley and Cols. J. B. Gordon, A. H. Colquitt and C. C. Tew. The slope to Couch's line was about 800 yards, without cover, and the advance directly in the face of guns on the slope and bristling on the summit, from which burst forth such a terrific fire of shell and canister that Hill's brigades withered under it. Toombs' brigade was picked up and sent to their support, but the six brigades were hurled back, some in great disorder after the loss of half their men.



Later in the evening Taylor's brigade of Ewell's division, on Hill's left, moved against the left of Kearny's division, and was repulsed by artillery fire alone. Half an hour after Hill had been disastrously repulsed and his troops scattered, McLaw's division of two brigades — Semmes and Kershaw — came up and assaulted Porter's right. Semmes made some headway up the slope, but was met by the 69th and 88th New York of Meagher's brigade, which Sumner had sent to Porter's assistance, and was repulsed after a hand-to-hand encounter. Kershaw, on Semmes' left, was likewise repulsed, and his repulse at twilight marked the close of the battle, but it was 9 o'clock before the firing ceased and quiet settled down on the bloody field. Sixteen Confederate brigades had heroically thrown themselves against the Union left, but were repulsed by the artillery and nine brigades. Advanced regiments were forced back, but generally recovered ground; batteries or parts of batteries were withdrawn, but again run forward; yet "never for an instant was the Union line broken or the guns in danger." The Confederate loss was over 5,500; Jackson's four divisions had 2,301 killed, wounded and missing; Magruder and Huger about 2,900. The Union loss was less than 2,000. Consult 'Official Records' (Vol. XI), Webb, 'The Peninsula'; 'McClellan's Own Story', Allan, 'History of the Army of Northern Virginia'; The Century Company's 'Battles and Leaders of the Civil War' (Vol. II).

E. A. CARMAN.

**MALVERN** (mâl'vern) **HILLS**, England, a range of picturesque hills on the borders of Worcester and Hereford shires. It extends north and south for about nine miles, and attains an altitude of 1,395 feet in the Worcester-shire Beacon.

**MAMANUA**, má-ma'noo-á, a Negrito people of the Philippines living in the interior of Surigdo Peninsula, island of Mindanao. Large numbers of them have been converted to Christianity by the Jesuit missionaries.

**MAMARONECK**, ma-mär'ô-nëk, N. Y., village in Westchester County, alt. 47 feet, on Long Island Sound and the New York, New Haven and Hartford Railroad, 20m. E by rail from Grand Central Station in New York. (Part of the village, along with the village of Larchmont, is included in the town of Mamaroneck.) The section is principally residential, but there are some small local industries. There is a public library. Notable buildings are the library, the municipal building, and the postoffice. The village's name is Indian, and is variously said to mean "He assembles the people" and "Where the salt water meets the fresh." Settled in the 1650's, the village was incorporated in 1895. It has a mayor and council, and a village manager. Pop. (1930) 11,766; (1940) 13,034.

**MAMARONECK RIVER**. See **BOUNDARIES OF THE UNITED STATES**.

**MAMBAJAO**, mām-bá'how, a town of the province of Misamis, Mindanao, situated on the northwestern coast of Camiguin Island, which lies off the northeast coast of Mindanao. Pop. 14,500.

**MAMBER**, a widely diffused colloquial name, for the common wild goat (*Capra aegagrus*) of southwestern Asia. See **GOAT**.

**MAMBUSAO**, mam-boo'sa-ō, Philippines, a pueblo of the province of Cápiz, island of Panay, on the Cápiz River, opposite Ibayay and 17 miles southwest of Cápiz, the provincial capital. Pop. 8,300.

**MAMELUKES**, mām'e-lüks, **MAM-LOUKS**, or **MAMALUKES** (from the Arabic *memalik*, a slave), in Egypt, slaves from the Caucasian countries, who from menial offices, were advanced to dignities of state. When Genghis-Khan made himself master of the greatest part of Asia in the 13th century, and carried vast numbers of the inhabitants into slavery, Nedjmeddin (Malek Salah), sultan of Egypt, bought 12,000 of them, including natives of Circassia, but chiefly Turks, from Capchak (Kipzak), had them instructed in the military exercises and formed a regular corps of them. They soon exhibited a spirit of insubordination and rebellion. Under his successor they interfered in the government, assassinated the sultan, Turan Shah, and in 1254 appointed Ibegh, one of their own number, sultan of Egypt. The dominion of the Mamelukes in Egypt continued 263 years. During this period they made some important conquests, and in 1291 they drove the Franks entirely out of the East. From the middle of the 18th century the number and wealth of the Mamelukes gave them such a superiority over the Turks in Egypt that the pasha appointed by the Porte was obliged to conform entirely to their wishes. This superiority was owing, principally, to Ali Bey, who ruled with unlimited power from 1766 to 1773, when he was assassinated. The Mameluke beys, especially Murad Bey, played an important part at the time of the French invasion. The Mamelukes, who were scattered throughout Egypt, and estimated at 10,000 or 12,000 men, maintained their numbers, principally by slaves brought to Cairo from the regions lying between the Black and Caspian seas. These were compelled to embrace the Mohammedan faith, and were all educated as soldiers. After a time they obtained a share in the government, and some of them even became beys, for none but Mamelukes were capable of holding this office. They formed a fine body of cavalry, and attacked the French, when they landed in Egypt, with the greatest fury; but they were unable to withstand the European artillery, and many of them soon joined the French. The pasha of Egypt, Mehemet Ali, destroyed the Mameluke beys 1 March 1811, by a perfidious stratagem, and immediately afterward ordered a general massacre of the Mamelukes in every province of Egypt. Some hundreds managed to escape into Lower Nubia, where they built a small town, and endeavored to keep up their force by disciplining negroes in their peculiar tactics. They did not succeed, however, and shortly afterward dispersed. (See **EGYPT**. Consult Makrizi, 'History of the Mameluke Sultans,' translated by Quatremère (3 vols., Paris 1837-41) and Muir, William, 'The Mameluke or Slave Dynasty of Egypt, 1260-1517' (New York 1906).)

**MAMEY**, or **MAMMEE-APPLE**. See **MAMMEE APPLE**.

**MAMEY SAPOTE**, a large tree (*Calocarpum mammosum*) of the family *Sapotaceæ*, native of tropical America. The leaves are large, obovate, glabrous, the flowers small and

inconspicuous and the fruit globose or egg-shaped, rusty brown, and three to seven inches long, with a single large seed. The fruit is very popular in the tropics, especially in Cuba, and is sometimes shipped to the United States. It is eaten fresh, or used for sherbets or marmalade. The tree is grown in Florida and California, but so far not very successfully.

#### MAMMALIA. See MAMMALS.

**MAMMALS**, a class of animals, known also as beasts, or quadrupeds, the highest of the vertebrate group in the sense that it comprises forms whose organization is on the whole the most efficient on account of the complexity, or perfection, of the various organs and parts. The diagnostic character of the class is the possession of cutaneous glands, which secrete a complex fluid, called milk, for the nourishment of the young. The lower jaw articulates directly with the cranium, without the mediation of a quadrate bone. The occipital condyles, two in number, form part of the exoccipitals. The internal ear contains a series of three or four separate small bones, which are concerned in audition. The heart is four-chambered, with two auricles and two ventricles, a single left aortic arch; blood warm, red blood discs, not nucleated. A muscular diaphragm separates the heart and lungs from the abdominal cavity. With few exceptions, mammals are clothed with hair, a special outgrowth of the epidermis, and even in these exceptional cases isolated hairs are found at some stage of their life.

Mammals as a class are extremely diversified in size, appearance and habits. The structure of some is modified for a purely aquatic life, of others for burrowing in the earth, for flying, for leaping, for running, etc. Some live entirely in the sea, others pass their lives in the treetops and others in subterranean caverns, which they excavate.

All mammals possess limbs, which are normally four in number, but the hind pair is suppressed in the whales and sea-cows. The limbs assume the form of legs for terrestrial progression, wings for flight or paddles for swimming. The class includes man, and the majority of the animals most useful to man, such as the horse, ox, sheep, goat, dog, cat, etc. It includes also the whales, the largest of existing animals. About 600 genera and 5,000 species of mammals (exclusive of fossil forms) are known, of which about 200 genera and 1,200 species occur in North America, north of Panama.

**Integuments.**—The skin of mammals consists of two principal layers, a superficial one, called the epidermis or cuticle, and a deeper layer, the dermis or corium. The epidermis is again divided into two layers, an external horny layer and a deeper one, called the Malpighian layer. The epidermis is usually quite smooth, and is beset with hairs which are a special outgrowth of this part of the integument peculiar to the class. The cetacea are without hairs, except a few about the mouth. In the pangolins, the epidermis develops large scales which cover the greater part of the body. Epidermic scales of smaller size are found on the tails of various rodents, insectivores and marsupials. The horns of ruminants, the nasal horn of the rhinoceros and all claws, nails and hoofs are also epidermic structures.

The dermis or corium is generally thicker

than the epidermis and contains blood-vessels, tactile nerve endings, sweat glands which open on the surface of the body and fatty tissue. In the whales and seals the fat cells are enormously developed immediately below the dermis and constitute the "blubber." In the armadillos bony plates occur in the dermis, forming a carapace or shell. They are covered by horny sheaths. The presence of small hard tubercles in the skin of certain porpoises gives ground for the belief that the ancestors of the cetacea were covered with a bony armor, somewhat like that of the armadillos.

**Hair.**—True hairs are found only on mammals. They are simple epidermic structures growing from papillæ sunk in the dermis. They consist of central cellular pith, encased in a horny sheath. In some mammals the sheath is rough, and the hair is then capable of being matted together to form "felt." In the majority of mammals the hairy covering consists of coarse long hairs and fine short hairs intermingled, forming the fur. In the porcupines the coarse hairs assume the form of large stiff spines, or quills; in the hogs they are smaller and more flexible, forming bristles. The hairy covering is usually shed once or twice annually, except in the case of man and of the manes and tails of such ungulates as the horse, the hairs of which may persist throughout life.

The majority of mammals have a number of large, long hairs, or vibrissæ, arranged in a definite fashion about the mouth, eyes and ears, which serve to a certain degree as tactile organs. In deer and some other ruminants the hairs consist mainly of the cellular pith and hence are easily broken.

The color of mammals is chiefly due to the pigments contained in the hair, which belong to the class known as melanins. Black, white and brown in various mixtures and shades are the commonest colors. The coloration is chiefly protective, but some such sharp contrasts of black and white as those of the skunks are thought to be warning colors, and the clear white of the under side of the tail of deer, certain hares, etc., to be directive, or distinguishing, marks for the young.

**Skeleton.**—The skeleton consists of an axial portion, comprising the skull, the backbone or vertebral column, the ribs and the sternum; and an appendicular portion or the skeleton of the limbs. In the skull the bones are bound firmly together by the overlapping or interdigitation of the edges, except the lower jaw, the ossicles of the internal ear and the hyoid, or tongue, bones. In adults most of the sutures are usually obliterated. The snout or rostrum consists of the premaxillary, maxillary, palatine and pterygoid bones below and on the sides, and the nasals above, while within are the median vomer and the ethmoid bones. The rostrum abuts against the brain-case or cranium, which is vaulted, and comprises three segments, an anterior one, consisting of the presphenoid, orbito-sphenoids and frontal; a middle segment, consisting of the basisphenoid, alisphenoids, squamosals and parietals; and a posterior segment, consisting of the basi-occipital, exoccipitals and supra-occipital. The exoccipitals bear the two condyles for articulation with the vertebral column. At the base of the skull, between the occipital and squamosal, are

the periotic bones, containing the organ of hearing or internal ear, and the tympanics, which form the bony walls of the orifice of the ear. The tympanics are greatly expanded in whales and some other mammals, forming shell-shaped bullæ.

The vertebral column comprises five sections, the cervical, dorsal (or thoracic), lumbar, sacral and caudal. The cervical vertebræ are seven in number in all mammals, whatever the length of the neck, the only exceptions being the manatees, which have six, and the sloths, which have six, eight or nine. In certain whales, the majority of porpoises and some rodents, the cervicals are more or less united; in the right whales they form a single bony mass. The dorsals vary in number from 9 to 22. Articulated with each is a pair of ribs. The ribs terminate below in cartilages, which sometimes ossify, forming what are called "sternal ribs." By means of these cartilages the anterior pairs of ribs are connected with the breastbone or sternum, which may consist of a single piece, as in the whalebone whales, or of several segments arranged longitudinally. The posterior pairs of ribs are sometimes called "floating ribs" because their cartilages do not meet the sternum, but are attached to those of the more anterior pairs, or are quite free. The lumbar vertebræ follow the dorsals and are without ribs. In number they vary from 2 to 30 in different forms. The number of dorsal and lumbar vertebræ combined is quite constantly 23 in the odd-toed ungulates (horse, rhinoceros, tapir, etc.), 19 in even-toed ungulates (deer, ox, sheep, etc.), and 20 or 21 in carnivores and most insectivores. Man, the higher apes and many bats have 17. Following the lumbar is the sacrum, consisting usually of three vertebræ joined together and connected with the pelvis. This region is not distinguishable in the whales and sea-cows, which lack hind limbs. The caudals, or tail-vertebræ, complete the column. In man and in certain apes and bats they are three in number and rudimentary, but as many as 46 are present in the long-tailed pangolins. In the intervals between the anterior caudals below are situated small V-shaped bones, called chevrons, whose chief function is to protect the larger blood-vessels of the tail. They are especially well developed in the whales and edentates.

In many groups of mammals the anterior limbs are connected with the axial portion of the skeleton through the pectoral girdle, consisting of the shoulder blades, or scapulæ, and the collar-bones or clavicles. The scapula is not attached directly to the vertebral column, but its acromion process is joined to the anterior end of the breastbone, or sternum, by means of the clavicle. Clavicles are wanting in all seals, whales, sea-cows and ungulates, and are rudimentary or wanting in various representatives of several other groups. They are present in man and, with one or two exceptions, in all monkeys, bats, insectivores and marsupials. The upper-arm bone, or humerus, articulates superiorly with the scapula, and below with the two bones of the fore-arm, the radius and ulna. In the majority of mammals the radius, or outer bone, is permanently crossed over the ulna at the lower end, as is especially well seen in the elephants. In man and a few

other forms the radius can be rotated. Following the fore-arm is the wrist or carpus, consisting of three rows of small bones, which, however, are variously united in different forms; and finally the digits, which are normally five in number, each consisting when fully developed of a metacarpal bone and three other bones, or occasionally more, called phalanges, though the first digit, or thumb, usually has but three in all. In man and apes the thumb is opposable to the other digits. In many mammals this digit and also the fifth are greatly reduced, or entirely wanting. In the ruminants, such as the pig, ox, deer, camel, etc., the first digit is wanting, and the second and fifth are reduced in size, or entirely lacking, while the third and fourth are equal in length and well developed. In the odd-toed ungulates, such as the horse, rhinoceros, tapir, etc., the third digit is longest, the others being reduced in length, rudimentary or wanting. In ungulates the metacarpals are usually much elongated and in such ruminants as the deer, ox, etc., are united, forming what is known as a "cannonbone." The cetacea are peculiar in that the bones of the fore-limb are not movably articulated and that the phalanges of the middle digits often greatly exceed three. In bats the phalanges are very greatly elongated to give support to the wing membranes.

The hind-limb is connected with the vertebral column through the pelvic girdle, which is united with the sacrum. The bones of the hind-limb, which are homologous to those of the fore-limb, are the femur or upper leg-bone, the tibia and the fibula or lower leg-bone, the tarsal or ankle bones and the metatarsals and phalanges constituting the hind-foot. The peculiarities of the bones of the fore-feet in ungulates, already mentioned, are found also, with only slight modifications, in the hind-feet.

The terminal phalanges of both fore and hind feet are compressed and pointed in beasts of prey and such as climb or dig, forming claws, which are covered with horny sheaths. In large running mammals, the terminal phalanges are more or less broad and flat and likewise covered with horny sheaths, forming hoofs or nails. Certain bones not connected with the skeleton, such as the *os penis*, *os cordis*, etc., are developed in the viscera of various mammals.

**Teeth.**—In mammals, unlike the lower vertebrates, teeth are not produced indefinitely, but in fixed number. At most two visible sets are developed. Traces are found, however, of at least one pre-milk and one post-permanent dentition. The first, called the milk dentition, appears during infancy, being replaced by the second set, called the permanent dentition, as maturity is reached. The milk teeth are less numerous and usually smaller than those of the permanent set. Teeth occur only in the premaxillary and maxillary bones and the mandibles or lower jaw. The upper teeth are divided into incisors, which are implanted in the premaxillæ; canines, which are almost invariably simple and stand immediately behind the suture between the premaxillæ and maxillæ; and premolars and molars, which occupy the edges of the maxillæ. The premolars have "milk" predecessors, while the molars have not. The nomenclature of the teeth of the lower

jaw is the same as for those of the upper jaw, their character being determined by their relation to the latter and by their form and mode of development. While the greatest diversity exists as to the form of the individual teeth, and the development of the dentition as a whole, there are rarely more than 44 in all. The exceptions are among the marsupials, where the number rises to 54 in the marsupial anteater, *Myrmecobius*, and to 64 in a fossil form *Amphitherium*, also among the cetacea, one species of which has as many as 246 simple teeth. The true anteaters, *Myrmecophagidae*, and the spiny anteaters of Australia, *Echidna*, are without teeth at any time, but many mammals which do not possess them when adult have rudimentary teeth in the fetal stages. Such is the case with the whalebone whales, and with the platypus, *Ornithorhynchus*. The rudimentary teeth in these disappear early and are replaced by whalebone in the case of the whales, and by horny plates resembling teeth in the platypus.

Teeth consists of two portions, the root and the crown. When most complex they contain three structural elements, the enamel, the dentine and the cement. The enamel is hardest and is restricted to the crown, while the dentine makes up the mass of the tooth, and the cement usually surrounds the root, or fills spaces between the enamel-folds of the crown. The enamel develops from the epithelial tissue of the jaws, the dentine from the deeper-lying areolar tissue and the cement from the walls of the tooth-capsule. Some teeth, such as the incisors of rodents, the tusks of the elephant, etc., grow continuously during life; other complete their growth early. Especially remarkable forms of teeth are the tusks of elephants, which are incisors, and the tusks of the narwhal, the boar and the babirusa, which are canines. When the crowns of the teeth greatly exceed the roots in height, as in the horse, the teeth are said to be hypsidont or hypselodont; when the reverse is the case, the teeth are called brachydont. Teeth having the crown in the form of tubercles, as in the hog are called bunodont; those with transverse ridges, as in the ox, many rodents, etc., are called lophodont.

**Alimentary Canal.**—The mouth, or entrance to the alimentary canal, contains the tongue, which in the majority of mammals is so attached below that it can be protruded but a short distance, but is often sufficiently free to be used in grasping food and turning it about in the mouth during the process of mastication. In those mammals which feed upon ants and termites, such as the anteaters, pangolins, etc., and also in certain fruit-eating bats, the tongue is very long and slender and can be extended far beyond the mouth. On the posterior surface of the tongue are the organs of taste, and the upper surface is often roughened by horny papillæ. A number of large glands, called salivary glands, open into the mouth. Their function is to moisten the food and initiate the process of digestion. The glands most constantly present are the parotid, situated at the base of the ear, and opening inside the cheek, and the submaxillary, situated near the angle of the lower jaw, and opening under the apex of the tongue. At the back of the mouth is the entrance to the oesophagus or gullet, usually a simple tube, leading to the

stomach. The stomach is an oblong, curved sac, usually enlarged at the cardiac end where the oesophagus is attached, and smaller at the lower, or pyloric, end, where it joins the intestines. It is usually simple, but in the ruminants and the cetaceans consists of several chambers. The intestines join the stomach at the pyloric end. They are usually of great length, and divided into two distinct sections. The portion nearest the stomach, called the small intestine, is joined below by one of larger diameter called the large intestine. The upper end of the latter is frequently dilated, forming a pouch called the cæcum, which in herbivorous mammals, and notably in rodents and many ungulates, is greatly enlarged or elongated. In man, the higher apes and the marsupial wombat it terminates in a narrow prolongation called the vermiform appendix. Different sections of the small intestine have received the names duodenum, jejunum and ileum; and of the large intestine, colon and rectum. The inferior orifice of the intestines is the anus or vent. Generally speaking, the intestines and cæcum are shortest in carnivorous mammals and longest in such as are vegetable feeders, but the carnivorous whales and seals, which have long intestines, form a conspicuous exception.

Besides the numerous glands situated within the intestine are two large ones, the liver and the pancreas, whose ducts open into the intestines near the stomach. The liver is a large, flat gland, which may be divided nearly into a right and a left lobe as in man, the cetacea and ruminants, or may have these lobes again subdivided into two by a longitudinal fissure. Two smaller lobes, called the Spigelian lobe and the caudate lobe, are commonly added. Attached to the liver is the gall-bladder, which is, however, absent in the cetacea and some other orders.

**Kidneys.**—The kidneys, whose function is to secrete urine, are situated in the upper part of the abdominal cavity near the vertebral column. They are two in number, oblong and usually simple, but in the cetacea, and also in bears and seals, are divided into separate lobules. A duct or ureter leads from each kidney to the urinary bladder, from which in turn a common duct, called the urethra, leads to the exterior of the body. In the monotremes, however, the ureters do not enter the bladder, but into a common urogenital passage or cloaca.

**Lungs.**—The lungs are situated in the thorax, which is cut off below from the abdominal cavity by a muscular diaphragm whose action assists in the process of breathing. The lungs consist of two spongy lobes, a right and a left, which are free below, but attached above to the two principal divisions of the windpipe. In the cetacea and sea-cows, the lobes are simple externally, but in other orders are more or less subdivided. A third median lobe, called the azygos lobe, is present in some groups. Air breathed in through the nostrils reaches the lungs through the trachea or windpipe, the upper end of which, the larynx, lies in the throat. Its orifice, the glottis, is protected by a cartilage, called the epiglottis, which prevents particles of food from entering the windpipe. The larynx is made up of cartilages, of which the largest are the thyroid, the cricoid and the arytenoid. Within the larynx are the vocal cords, two parallel elastic, fibrous bands, whose

vibrations produce the voice. The lower end of the windpipe divides into two smaller tubes, or bronchi, each of which enters a lobe of the lungs and subdivides into numerous smaller branches. A third bronchus, which enters the right lung, occurs in some cetaceans and ruminants.

**Heart.**—The heart in mammals is four-chambered, consisting of two thin-walled auricles and two ventricles, both with thick walls, but the right, which supplies only the lungs, thinner than the left. There is no direct communication between the left and right sides of the heart after birth. The valve between the right auricle and the right ventricle is tendinous, except in the monotremes.

The aorta, or principal artery, bends toward the left immediately beyond its connection with the heart and gives off the innominate, left common carotid, and subclavian arteries, which, with their branches, supply the head and anterior limbs. The method of branching of these arteries from the aortic arch and from one another varies widely. Blood is carried from the alimentary canal to the liver by a single vein, except in *Echidna*, in which as in lower vertebrates the abdominal vein is present. The kidneys are supplied with blood only by the renal arteries.

**Brain.**—Except for certain fossil forms, the brain of mammals is characterized by its relatively larger size as compared with that of lower vertebrates, and especially by the magnitude of the cerebral hemispheres and the perfection of the connections between them. In most mammals the surface of the brain is divided by numerous irregular fissures and convolutions. They are absent only in small bats, rodents and insectivores, and in *Ornithorhynchus*. The largest forms in each order, generally speaking, exhibit the greatest complexity, and there has been a remarkable development in the class in this direction since Tertiary times. The cetacea have very large and complex brains, though they are small relatively, when compared with the size of the body.

**Sense Organs.**—The organs of sense, except that of touch, are located in the head. The sense of touch is generally distributed over the skin, but is most acute in the snout, and in the extremities, except when used merely in locomotion. The wings of bats and the prehensile tails of monkeys are also especially sensitive. Some burrowing mammals, such as the mole, have imperfect eyes, the optic nerve being more or less atrophied. The Indian river-dolphin, *Platanista*, is a blind form, having rudimentary eyes, without crystalline lenses. The mammalian ear is characterized, besides the chain of ossicles, already mentioned, by the complex cochlea, which is usually spirally convoluted. The tympanic membrane, or eardrum, seals the auditory chamber from without. In the majority of mammals the external orifice of the ear is surrounded by a fold of skin, called the pinna or external ear. These are absent in cetaceans, sea-cows, seals, etc., which live in the water, and also in some burrowing mammals.

**Reproductive System.**—In mammals the female reproductive organs comprise the ovaries, Fallopian tubes or oviducts, uterus and vagina. The ovaries are two in number, a left and a right. Approximated to them are the

Fallopian tubes, which widen below and form the uterus. In the lower mammals the uterus of each side is separate, but the two unite below in a common vagina, while in the higher groups, the uterus and vagina are both single. The male organs comprise the testes, spermatic cord and penis. In cetaceans, sea-cows and seals, which are aquatic, and in the elephants, conies and many edentates, the testes are internal in position, but in most other forms they descend periodically, or permanently, into a pouch of the integument, called the scrotum. The structure of the penis in mammals is peculiar to the class. An *os penis* is present in the majority of bats, insectivores, rodents, carnivores and primates.

During development the mammalian foetus is nourished through a complex structure, called the placenta, formed in part by the internal wall of the uterus of the mother and in part by the membranes of the foetus itself. The placenta is characteristic of the class as a whole, but is not found in the monotremes, nor in most marsupials. The form and other characteristics of the placenta differ in the several orders of mammals and are regarded as of importance in classification.

**Distribution.**—The geographical distribution of existing mammals, as of other animals, is the result of varied conditions and influences, some transient and others of long continuance, beginning in the relatively remote geological times when the class first made its appearance. Among the principal factors in the problem of distribution may be included changes in the extent and configuration of the land areas of the globe, changes in climate and in food supply, the appearance and disappearance of enemies, and latest, but by no means least, the interference of man. These and other factors in distribution are considered under the heading **DISTRIBUTION OF LIVING MAMMALS**. It is only possible here to mention some of the more important facts in the distribution of mammals. Of widest distribution are the purely aquatic orders, the cetacea and pinnipedia, whose range covers all seas and reaches from pole to pole, but it should be noted that no sea-lions occur in the north Atlantic. Next follow the bats, whose range is nearly world-wide, but they do not enter the Antarctic zone, and only very few species cross the Arctic Circle. On the other hand, they are found in New Zealand and in oceanic islands where no terrestrial indigenous mammals occur. Of the purely terrestrial orders, the rodents have the widest range, covering every continent and reaching from the Arctic zone to Patagonia and Tasmania. Carnivores, like rodents, have an almost world-wide distribution, but in Australia only one species of the order occurs, the dog known as the "dingo," *Canis dingo*; and it is uncertain whether this may not have been introduced by man at a remote date. The monotremes (comprising only the genera *Ornithorhynchus*, *Echidna* and *Proechidna*) are limited to Australia, Tasmania and New Guinea. Marsupials occur only in Australia, Tasmania, New Guinea and America. The American marsupials, with the exception of one genus, all belong to the family *Didelphidae*, or the opossums. Edentates occur only in America, southern Asia and Africa. They have their greatest development in South America. One genus, *Tatu*, extends northward



into Texas. Ungulates inhabit all continents except Australia, but only two or three species enter South America. Of the two groups forming the order *Primates*, the lemurs and lemuroids occur only in Madagascar, Africa and southern Asia, while monkeys inhabit only Africa, southern Asia and South and Central America. One ape, *Macacus muus*, is found at Gibraltar, but it is only doubtfully indigenous.

**Fossil Mammals.**—Mammals are believed to have originated as an offshoot from certain Permian and Triassic reptiles called *Theromorphs* or *Anomodontia*. The earliest recognizable remains of mammals are certain small teeth and jaw-bones found in the Triassic formations. They belonged to forms resembling monotremes and marsupials in some characters, but are usually placed in a separate order, called *Allotheria* or *Multituberculata*. Representatives of the *Allotheria* continued on through the Jurassic and Cretaceous. The existing orders of mammals first appear in the Eocene, the lowest formation of the Tertiary period, being foreshadowed in the lowest beds of that period by certain generalized groups such as the *Creodonta* and *Condylarthra*. The Eocene also contains remains of several groups, or suborders, of ungulate mammals, which have no living representatives. These are the *Ancylopoda*, *Typotheria* and *Toxodonta*.

The later Tertiary and the Quaternary periods show a greatly increased number and diversity of forms. Many of them represent families which persisted for only a relatively short period and are now extinct; others have continued to the present. Among the oldest of existing genera are *Didelphis* (opossum), *Sciurus* (squirrel), *Myoxus* (dormouse), *Sorex* (shrew), *Vesperugo* and *Vesperugo* (bat) and *Viverra* (civet), which originated in the Eocene; *Tapirus* (tapir), *Rhinoceros*, *Giraffa* (giraffe), *Elephas* (elephant), *Sus* (pig), *Talpa* (mole), *Erinaceus* (hedgehog), *Mustela* (marten), *Lutra* (otter), *Hyæna*, *Felis* (cat) and *Phoca* (seal), which originated in the Miocene.

**Classification.**—The class *Mammalia* was divided by Linnæus into three principal sections, *Unguiculata*, *Ungulata* and *Mutca*. The last comprises the cetaceans, the second all the ungulates except the elephant, and the first, the remainder of the class. This classification was replaced by Blainville, who proposed on embryological grounds to divide the class into *Monodelphia*, or mammals with a placenta; *Didelphia*, or mammals without a placenta (the marsupials) and *Ornithodelphia*, or the monotremes. Richard Owen combined the last two subclasses under the name of *Eplacentalia* and gave the placental mammals the name of *Placentalia*. Speculation as to the origin of the class as a whole led Huxley to propose as the source a hypothetical group which he named *Hypotheria*, the characters assigned being the absence of milk glands and of a corpus callosum in the brain and the presence of a quadrate bone for the articulation of the mandible. Existing mammals were divided into *Prototheria*, comprising the monotremes, *Metatheria*, the marsupials, and *Eutheria*, the so-called placental mammals. Cope in 1889, while retaining the subclass *Prototheria* for the monotremes, placed the entire remainder of the class in the subclass *Eutheria*. Flower and Lydekker

(1891) adopt Huxley's divisions, while Beddard (1902) makes use of those of Cope. Flower and Lydekker's arrangement of families and higher groups is as follows (fossil groups printed in italics):

Subclass 1. *PROTOTHERIA*.

Order 1. *Monotremata* (Monotremes).

Families: *Ornithorhynchidæ*, *Echidnidæ*.

(Group, *Multituberculata* or *Allotheria*

Families: *Plagiaulacidæ*, *Polymastodontidæ*, *Tritylodontidæ*).

Subclass 2. *METATHERIA*.

Order 2. *Marsupialia* (Marsupials).

Suborder 1. *Polyprotodontia*

Families: *Dromatheridæ*, *Amphitheridæ*, *Spalacotheridæ*, *Didelphyidæ*, *Dasyuridæ*, *Peramelidæ*.

Suborder 2. *Diprotodontia*

Families: *Phascologyidæ*, *Phalangeridæ*, *Diprotodontidæ*, *Nototheridæ*, *Macropodidæ*.

Subclass 3. *EUTHERIA*.

Order 3. *Eudentia* (Edentates).

Families: *Bradypodidæ*, *Megatheridæ*, *Myrmecophagidæ*, *Dasypodidæ*, *Glyptodontidæ*, *Manidæ*, *Orycteropodidæ*.

Order 4. *Sirenia* (Sea-cows).

Families: *Manatidæ*, *Rhytidæ*, *Halicornidæ*, *Halitheridæ*.

Order 5. *Cetacea* (Cetaceans).

Suborder 1. *Mystacoceti* (Whalebone whales).

Family: *Balenidæ*.

Suborder 2. *Archæoceti*.

Family: *Zeuglodontidæ*.

Suborder 3. *Odontoceti* (Toothed whales).

Families: *Physeteridæ*, *Platanistidæ*, *Delphinidæ*.

Order 6. *Ungulata* (Hoofed mammals).

Suborder 1. *Artiodactyla* (Even-toed ungulates).

Families: *Hippopotamidæ*, *Suidæ*, *Charopotamidæ*, *Anthracotheeridæ*, *Merycopotamidæ*, *Cotylopodæ*, *Anoplotheridæ*, *Dichodontidæ*, *Tragulidæ*, *Camelidæ*, *Poebrotheridæ*, *Cervidæ*, *Giraffidæ*, *Antilocapridæ*, *Bovidæ*.

Suborder 2. *Perissodactyla* (Odd-toed ungulates).

Families: *Tapiridæ*, *Lophiodontidæ*, *Palæotheridæ*, *Equidæ*, *Rhinocerotidæ*, *Lambdaotheridæ*, *Chalicotheridæ*, *Titanotheridæ*, *Macrauchenidæ*.

Suborder 3. *Toxodonta*.

Families: *Toxodontidæ*, *Typotheridæ*.

Suborder 4. *Condylarthra*.

Families: *Periphychidæ*, *Phenacodontidæ*, *Memuscotheridæ*.

Suborder 5. *Hyracoidea* (Conies).

Family: *Hyracidæ*.

Suborder 6. *Amblypoda*.

Families: *Pantolambdidæ*, *Coryphodontidæ*, *Uintatheridæ*.

Suborder 7. *Proboscidea* (Elephants).

Families: *Dinotheridæ*, *Elephantidæ*.

(Group *Tillodontia*).

Families: *Anchippodontidæ*, *Calamodontidæ*).

Order 7. *Rodentia* (Rodents).

Suborder 1. *Simplicidentata*.

Families: *Anomaluridæ*, *Sciuridæ*, *Haplodontidæ*, *Ischyromyidæ*, *Castoridæ*, *Myoxidæ*, *Lophiomysidæ*, *Muridæ*, *Spa-*

- laciadæ, Geomyiada, Dipodida, *Theridomyida*,  
*Octodontida*, *Castoroidida*, *Hystri-*  
*cidæ*, *Chinchillida*, *Dinomyda*,  
*Caviada*, *Dasyproctida*  
 Suborder 2. *Duplicidentata*  
 Families *Lagomyida*, *Leporida*  
 Order 8 *Carnivora* (*Carnivores*)  
 Suborder 1. *Carnivora vera* (*Fissipeds*)  
 Families: *Felida*, *Hyenida*, *Proterida*,  
*Viverrida*, *Canida*, *Ursida*, *Mustelida*,  
*Procyonida*.  
 Suborder 2 *Pinnipedia* (*Pinnipeds*)  
 Families: *Otarida*, *Trichechida*, *Phocida*.  
 Suborder 3 *Creodontia*  
 Families: *Hyænodontida*, *Proteridæ*,  
*Actocymida*, *Mesonychida*  
 Order 9 *Insectivora* (*Insectivores*).  
 Suborder 1 *Insectivora vera*  
 Families: *Tupaiida*, *Macroscelidida*,  
*Erinacida*, *Soricida*, *Talpida*, *Potamo-*  
*galida*, *Solenodontida*, *Centetida*,  
*Chrysochlorida*.  
 Suborder 2 *Dermoptera*  
 Family *Galeopithecida*  
 Order 10 *Chiroptera* (*Bats*).  
 Suborder 1 *Megachiroptera*.  
 Family: *Pteropida*  
 Suborder 2 *Microchiroptera*  
 Families *Vespertilionida*, *Nycterida*,  
*Rhinolophida*, *Emballonurida*, *Phyllostoma-*  
*stomatida*  
 Order 11. *Primates*  
 Suborder 1 *Lemuroidea* (*Lemurs and Lem-*  
*uroids*)  
 Families: *Hyopsodontida*, *Chiromyida*,  
*Tarsuida*, *Lemurida*  
 Suborder 2. *Anthropoidea* (*Monkeys and*  
*Man*).  
 Families: *Hapalida*, *Cebida*, *Cercopithec-*  
*ida*, *Simiida*, *Hominida*

The groups of existing mammals whose structural peculiarities are such as to entitle them to rank as separate families vary greatly as regards the number of genera and species they comprise, some being represented by a multitude of different forms, while others consist only of a single species, or a single genus with but a few species. Families consisting of only a single genus and species are as follows: The *Chiromyida*, established for the reception of the Aye-Aye, a singularly modified lemuroid mammal, confined to Madagascar; the *Dinomyida*, comprising only a large Peruvian rodent, somewhat like a paca, of which a single specimen is known; the *Antilocaprida*, represented only by the Prong-horn of the western plains of North America; the *Notoryctida*, comprising only a small mole-like marsupial recently discovered in South Australia; the *Ornithorhynchida*, comprising only the Platypus, or Duck-bill, of Australia. These and other restricted families are to be looked upon as fragments of groups of genera and species, of which the greater number are extinct, or as branches from main lines of development which have never progressed and ramified.

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**MAMMARY GLANDS**, the milk-glands of mammalian animals (see BREAST). They are present in all mammals, in both sexes, but in the male are usually rudimentary, their functional activity being limited to the female, who secretes in these glands the milk for nourishing her young during a natural period after birth. In all mammals they are placed in pairs, but vary much in position and number in different groups. Zoologists give them names according to their position near the armpits (axillary), on the chest (pectoral), on the belly (ventral or abdominal), or near the groin (inguinal). They are never situated on the back. The number in an individual may be from 2 to 12 or more, and is usually even. The structure of the cow's udder is due to the uniting of the same number of mammae as there are of teats, the number of which, when more than two, usually corresponds to that of the young produced at each birth. The mammary glands of Marsupialia (q v) are contained in the pouch. In monotremes—duck-bills and echidnas—the nipple is not present. (See PROTOTHERIA)

**Diseases of the Mammary Glands.**—The common inflammation of the glands (mastitis) is often attended by much swelling, with fever and painful tenderness. The formation of pus is apt to result in a slowly pointing abscess. Great care in diet and regulation of the bowels should be observed. Purgatives and fomentations may be necessary, also in many cases the placing of the arm on the affected side in a sling. Drawing off the milk and evacuating the pus may be practicable and will afford great relief. Pain in the breasts (mastolynia) may result from many causes, of which sore nipples is one of the most frequent. The nipples are also subject to cracks, ulcerations, etc., which occasion much difficulty and pain to the mother when suckling the child. Lotions of an astringent character, as tannin, etc., have a remedial effect in such disorders, as have also collodion and lunar caustic (nitrate of silver), when applied to the sore nipple. Metallic shields are used in severe cases for protection of the affected point. Among many specific disorders to which the mammary glands are liable are cancer and galactocoele and other forms of tumor. See MILK FEVER

**MAMMEE APPLE**, or **SOUTH AMERICAN APRICOT**, the fruit of a clusiaceous tree, bearing white, showy, fragrant flowers, growing naturally in tropical America, but largely cultivated in tropical parts of the Old World. The fruit is several inches in diameter, with a double rind and a yellowish pulp like that of an apricot, which is sweet and nourishing and is eaten raw or with wine and sugar or is boiled. A spirituous liquor called Eau Cr  ole is distilled from its flowers; and the gum exuding from the bark is used by the Central Americans for destroying chigoes in the feet. This gum-resin is similar to the "gamboge" derived from a closely related West African tree (*Garcinia hamburji*).

**MAMMON**, a term popularly held to be a mere personification of riches. It is used in

Matt vi, 24 and Luke xvi, 9 Milton makes Mammon a fallen angel of sordid character

**MAMMOTH**, an elephant (*Elephas primigenius*) which inhabited the temperate parts of the northern world during the Glacial period, and at its close spread northward with the retreat of the ice, and survived until the Neolithic period of human history. Some account of the origin and probable wanderings of the species is given in the paragraph relating to fossil elephants under **ELEPHANT**. Mammoth remains have been found in intimate association with the handiwork of savage man; and upon a piece of bone a portrait of this animal was found scratched, the accuracy of which shows a close acquaintance by the Cave-dwellers of France with the animal in life, and much artistic skill. This elephant, although the word "mammoth" has become an expression for hugeness, was little if any larger, on the average, than the modern Asiatic elephant, to which it was nearly related. Its remains are abundant and enable us to reconstruct its form and features completely, especially since the remarkable discovery, first in 1799, of carcasses frozen into the icy cliffs along the Arctic coast of Siberia. One of the most important discoveries of this kind occurred in 1801. Since the earliest known times ivory from buried tusks of these animals has been obtained from northern Siberia and Alaska, and many curious stories were invented to account for its origin, especially among the Chinese, who had never seen an elephant; but the specimens above mentioned contained not only the tusks still in their sockets and every bone in its place throughout the skeleton, but a great part of the flesh was in a condition fit for sledge-dogs to eat and enjoy, and was covered with thick skin still clothed with long dark hair, beneath which was a dense woolly fur, well fitted to protect the animal against arctic cold. The ears were much smaller than those of modern elephants. This specimen of 1801, which is preserved in the Royal Museum at Saint Petersburg in the attitude in which it was found buried, measured 16 feet 4 inches from the forehead to the extremity of the tail; its height was 9 feet 4 inches, and the tusks, along the outer or greater curve, measured 9 feet 6 inches. Of other well-known specimens, that skeleton mounted in Chicago is one of the largest known, and its tusks measure 9 feet 8 inches. The largest tusks on record are a pair found in Alaska which measure 12¾ feet in length. All mammoth tusks show an outward and upward sweep very distinct from the growth of elephant tusks. The mammoth seems to have been extremely numerous all over northern Europe, Asia and North America, especially during post-glacial times, when northern Asia was covered with pine forests to the borders of the Arctic Sea, affording plentiful food in their leaves and twigs upon which these animals browsed. The disappearance of these forests, due to slow climatic changes, is supposed to be the principal influence which led to the extermination of the species, a fact otherwise not easily to be explained. It is probable that human hunting had much to do with the mammoth's final disappearance. (See also **ELEPHANTS**; **FOSSIL**). Consult Beddard, F. E., 'Mammalia' (New York 1902); Lucas, F. A., 'Animals of the Past' (ib. 1901); Scott, W. B.,

'History of Land Mammals in the Western Hemisphere' (ib. 1913); Herz, O. F., 'Frozen Mammoth of Siberia' (Washington 1904). See **MASTODON**.

**MAMMOTH CAVE, Ky.**, a remarkable American cavern, in Edmonson County, 8½ miles southwest of Louisville, reached by a small branch line connecting at Glasgow Junction with the Louisville and Nashville Railroad. Its areal diameter is about 10 miles, and about 100 miles of passageway have been explored, including avenues, chambers, pits, domes and rivers. What is termed the Main Cave is three miles long, varying in width from 40 to 175 feet and in height from 40 to 125 feet. Its greatest enlargement is known as the Chief City (or Temple), an oval room 541 feet long, 287 feet wide and 125 feet high, anciently a rendezvous of the Indians, whose torches and other relics have been found in abundance. The Star Chamber mimics the starry heavens by reason of its lofty ceiling of black oxide of manganese flecked by snowy crystals of gypsum. The cavern exists in five successive tiers, through which, at various points, shafts have been cut, which are styled pits or domes, according to the point of view. The largest are the Bottomless Pit, Goin's Dome, the Mammoth Dome and the Maelstrom, and their average depth is about 100 feet. Oval depressions, locally known as "sink-holes," drain through the pits and chasms and form subterranean lakes and rivers; which finally find an outlet to the neighboring Green River. The largest, the Echo River, gets its name from the wonderful reverberations of sound along its course. Boats are provided for short voyages. Eyeless fish abound, of which there are three or four species; besides, blind crawfish, blind crickets, flies, beetles and spiders and other abnormal fauna are found on the walls and under the rocks. The structure and habits of these animals have been studied with great care.

Beyond River Hall long avenues extend, many adorned by marvelous gypsum rosettes and brilliant arches of crystal efflorescence in the most fantastic diversity. Cleveland's Cabinet as frequently mentioned as a treasure-house of cave flowers, but some of the smaller rooms, for instance, Charlotte's Grotto, can boast of finer displays. The great cavern is said to end at Croghan's Hall, where is the Maelstrom already mentioned, but the few who have dared go to the bottom of this profound abyss report wide and long avenues beyond, which are yet to be explored. Everywhere, even in the deepest pits, the atmosphere is both chemically and optically pure; the temperature is uniformly about 54° F. all the year around, as has been determined by a long series of exact scientific observations, in order to discover the temperature of the crust of the earth.

The discovery of the Mammoth Cave is usually credited to a hunter named Hutchins, in 1809; but the present manager of the estate finds that the county records, in 1797, fix the entrance to this cavern as a landmark for a piece of real estate. The locality first gained notoriety by reason of its immense deposits of saltpeter, which were used in the manufacture of gunpowder during the War of 1812. After passing through the hands of several owners, the cave was bought by Dr. John Croghan, who

willed it to his nephews and nieces, with instructions that at their death it should be sold at auction. The acquisition of an area of over 70,000 acres, to be known as Mammoth Cave National Park, was authorized by Congress in 1926. See also CAVE; CAVE ANIMALS.

**MAMMOTH HOT SPRINGS.** See YEL-LOWSTONE NATIONAL PARK

**MAMO**, a bird (*Drepanis pacifica*) of the Hawaiian Islands, related to the creepers, and now nearly extinct because of the great demand in past years for their yellow feathers for making the feather-cloaks formerly worn as insignia of royalty by the chiefs. Other birds supplied certain other required feathers. Very few of these cloaks remain in museums.

**MAMORÉ**, mà-mô-rá', a river of Bolivia which has its rise in the Cordillera Real, near Sucre, and flows first east by south, then forms almost a semi-circle toward the north to Trinidad, from where its course is nearly north to where it unites with the Beni and forms the Madera River. In the first part of its course it is called Río Grande. The Mamoré is about 1,300 miles long and navigable for about 1,000 miles, with some obstructions. About 40 miles above its junction with the Beni are the Guajara Falls, above which navigation is free for about 400 miles to places where fallen logs have filled in between the banks and formed dams.

**MAMPALON**, an aquatic animal (*Cynogale bennetti*) of Borneo, of the civet family. It is otter-like in form, is about 18 inches long, has stout webbed plantigrade feet and is thoroughly adapted to an aquatic life while retaining purely viverrine characteristics of structure.

**MAN.** See ANTHROPOLOGY; APE; ARCHÆOLOGY; ETHNOLOGY; PRIMATES

**MAN, Christian Anthropology.** The thorough discussion of the theory of evolution for the past two generations has served to make it clear just what contributions to the problems of man's origin and place in the universe have been made by modern science. For a time it was felt that the whole mystery of man's existence was to be solved. It is now recognized that in spite of our great advance in knowledge, to use Bryce's expression the "mists that hang around man's origin and man's destiny are so far as scientific knowledge goes just as deep as ever." Only those who fail to appreciate that science does not solve mysteries, but multiplies them, are of the opinion that biology, notwithstanding all its contributions to our knowledge of man, has furnished the key to the problems of anthropology. More now than ever those who know our modern science feel that for any reasonably adequate understanding of man's nature and place in the universe a reference to the records of man's religious experience must be made. The time for the synthesis of Christian and scientific views with regard to man has come to them, not with the purpose of reconciliation, for no reconciliation is needed, but for a proper understanding of the philosophy of life that lies behind both science and faith.

The enthusiastic reception which always greets a novelty in thought even in the serious domain of science led many to exaggerate the significance of the theory of evolution (qv) through natural selection which came to occupy

so much attention in the biology of the second half of the 19th century. As a result a widespread impression prevailed that evolution had accounted so completely for the origin of all living beings from the lowest to the highest as they exist around us that the idea of creation and a Creator was no longer tenable. The closing words of Darwin's 'Origin of Species' makes it very clear that the great English scientist himself had not, as a result of his elaboration of the theory of natural selection as an explanation for evolution, given up his belief in creation or the Creator nor felt that his scientific work had any tendency to produce disbelief in religious traditions in this matter. He said "There is grandeur in this view of life with its several powers having been originally breathed by the Creator into a few forms or into one; and that, while this planet has gone circling on according to the fixed law of gravity, from so simple a beginning, endless forms most beautiful and most wonderful have been and are being evolved."

What Darwin thus brought to be the basic thinking of scientists in the latter half of the 19th century was the theory of descent or derivative creation, that is, creation of one or more simple forms of life to which were given the power of developing with the production of higher forms. This teaching of derivative creation is not modern in origin, but on the contrary very old. Christian philosophers from the earliest times formulated opinions clearly expressive of this view. Saint Augustine suggested that the original creation was of *semina rerum*, "the seeds of things." These seeds once brought into existence went on developing until the universe of living things which we see around us came into existence. This teaching of Saint Augustine became the Christian tradition down the centuries. Saint Thomas Aquinas (13th century), whose writings by the special direction of the Pope are the accepted authority in the Catholic theological schools of the world to-day, was a close disciple of Saint Augustine in this as in most other questions. Cornelius à Lapide (1567-1637), looked up to as an authority scarcely less than Saint Thomas on biblical matters, followed Augustine's teaching. When St George Mivart not long after the publication of Darwin's 'Origin of Species' pointed out in his 'Genesis of Species' that Suarez, the great Spanish theologian, taught this doctrine of derivative creation, it made quite a sensation among those who had been inclined to think of certain narrow literal interpretations of Scriptural expressions as the constant Church tradition. The sensation subsided, however, when it came to be recognized that this teaching of Suarez far from being exceptional represented the most conservative Christian opinions since the time of the Fathers. Suarez actually wrote "a separate section of his metaphysics in opposition to those who maintained the distinct creation of the various kinds—or substantial forms—of organic life" (Mivart). The crude anthropomorphic notion which had gained popular credence, that the Creator had as it were fashioned each of the species directly out of earthly materials, had not been accepted by earlier philosophic thinkers. So far as it came to be the belief of those who gave any attention to the subject, it was a late gloss on the Scriptural account of creation

founded on the narrower views which became common only after Luther's movement made the literal interpretation of the Bible the sole rule of faith.

Only the knowledge of the genuine Christian tradition in the matter was needed to dispel the idea of any incompatibility between the theory of evolution in the true scientific sense of the term and creation. It is just as much creation, if but a single form of life were evoked from nothing, the great law of evolution being impressed upon it so that it gradually grew more complex until the whole series of living beings that we see around us came into existence, as if each being were created by a special act. The creation of species would under that explanation be the granting of power to any particular form of life to lift itself above what it was by inheritance from its progenitors. The special creation of man would then be the gradual formation of his body from the earth through a long series of ever-developing living beings until the organism had reached a stage of development capable of providing the mechanism suitable for a rational soul to act in association with matter. Only when this living matter had become suitable for co-ordinate activities with man's spirit was the rational soul breathed into the body, which by this inspiration was made like to its Creator.

The Scriptural description of Creation is summed up in the words "Let the earth bring forth each living creature in its kind, cattle and creeping things, and beasts of the earth according to their kind, and it was so done." . . . "And He said let us make man to our own image and let him have dominion over the fishes of the seas and the fowls of the air and the beasts and the whole earth and every creeping creature that moveth upon the earth"

"And God created man to His own image"

It is the rational spirit of man that is Divine and there is no good reason to forbid the thought that God may have created the body to receive that spirit by a long succession of evolutionary steps. To many there would seem to be more reverence in that idea than if God took red earth (Adam, in Hebrew) and fashioned the body directly and then breathed the spirit into it. Wasmann in his 'Modern Biology and the Theory of Evolution' reminded us that the taunt that orthodox believers imagined the God of the Bible as a sort of potter in human form fashioning for Adam a body of clay was utterly unjustified by any real knowledge of Christian tradition. Saint Augustine described any such imagination as *nimum puerilis cogitatio* — "entirely too puerile for consideration"

Newman called attention to the Scriptural expression in Genesis (ii, 7): "The Lord God formed man of the dust of the ground and breathed into his nostrils the breath of life and man became a living soul," and comments: "Here are two acts on the part of the Creator — the forming the dust, and the breathing the life. . . . Man was made rational *after* he was made corporeal"

Wasmann said, quoting Saint Augustine once more, that "It would seem more fitting to believe that in producing the first man as in producing all other creatures, God employed natural causes as far as they were capable of co-operating toward this aim" Wasmann con-

tinues, "We must, therefore, admit that it would be possible for anyone to account for the origin of the human body by assuming God to have created a primitive cell and to say that the earliest ancestors of man were organisms living as simple cells; later on as the organs were differentiated and the nervous system was formed and a sensitive soul came into existence they developed into animals. The organism gradually increased in perfection and as the brain developed this soul in course of time prepared a human body suited to be the dwelling of a rational soul and, through possessing highly developed brain cells, able to satisfy the conditions of spiritual activity and its verbal expression. Assuming this theory to be true we may still say that man certainly only became man at the moment of the creation of his rational soul" He adds that "any objection to this theory (on the score of lack of dignity in the procedure) may be met by a reminder that man's body even now is produced by germinal development from a fertilized ovum"

The question as to whether man's body came by such a process of evolution through the animals still remains open. It is now confessed by scientists to be quite absurd to suggest that man is descended from the monkey, and Klaatsch went so far as to say that man is not descended from the monkey because the monkey is degenerate man. The generally accepted idea is that both the monkey and man came from a remote ancestor, one branch of whose progeny continued an upward course in the direction of the human body, while the other degenerated into that of the monkey. This is, however, entirely theory. There is no evidence for it and though Zittel gives no fewer than 30 genera of fossil pro-simæ and 18 genera of fossil apes not one connecting link has been found between their hypothetical and ancestral form and man of the present time. "The whole hypothetical pedigree of man is not supported by a single fossil genus or a single fossil species" (Wasmann). The *pithecanthropus erectus* or so-called Trilim man of Java has all of his scientific relationship to man in the word anthropus, the name forced upon him at the beginning, for he does not belong to the pedigree of modern man, but to that of the modern apes.

A great many people in our time are of the impression that it was not until the serious discussion of the theory of evolution came up that man's intimate relations to the animals was recognized. It has been the teaching of Christian philosophers from the very beginning that man is an animal, and the definition for man adopted from the Greeks by all Christian writers was that he is a rational animal. As to where his body came from Christians are manifestly free to believe — if they think there is evidence for it — that the animality of man is the result of a process of evolution by which in the course of biogenesis the human body developed through the animals and then was raised by special creation to the highest species by the introduction of a soul. Those who argue that there is no need for this special creation of man are as a rule scientists whose interests have been largely centred on man's relationship to the animals rather than on his superiority to them. The zoologist, intent on the



morphology of the human body and its intimate relation to animal bodies, easily minimizes the extremely great difference that his mind confers upon man. Zoologists have suggested that man may be defined as "a tool-making and tool-using animal." If that were all that man really is, then there would be no need for the special creation of a soul. Man looked on as merely a higher animal is "a tool-making, tool-using animal," but as a rational animal, man is a thought-creating being, and this places an immense gap between him and the other animals. There can be no question of any process of evolution from the animal accounting for the being which produced the 'Iliad,' or the 'Divine Comedy,' or Shakespeare's 'Hamlet,' or created Hagia Sophia or Saint Peter's, or painted the Sistine Madonna. To comprehend their origin we recur to the introduction of some great new force from without. The necessity for a definite series of renewed impulses putting new powers of development into living beings becomes clearer the more biology is studied. That evolution could have occurred by a series of very slight changes for which chance might be appealed to has now been definitely given up. Such genesis of species as science has been able to trace has come by rather large jumps for which there is no sufficient cause in the conditions of preceding life. Manifestly some new force has been introduced into nature and it cannot be thought seeing the results that this occurred without design. As we shall see teleology or the place of design in the world has come back into biology with renewed force in recent years.

Many seem to think that the more careful study of the significance of natural selection in the world of life had entirely done away with any necessity for an appeal to forces outside of nature to account for evolution. Any such thought, however, is due to failure to recognize the real place of natural selection as a factor in evolution and to hand over natural processes to the influence of chance. Almost needless to say chance is only a word used to indicate our lack of knowledge of the factors at work in any problem. Creative direction was the phrase that Lord Kelvin preferred to use as descriptive of the forces at work bringing about whatever development there is in nature. Darwin himself did not believe that natural selection did away with the necessity for creation and expressed himself to this effect in the last sentence of his book. He realized very clearly that though his book was called the 'Origin of Species' it did not discuss origins, but, on the contrary, preservations. He would have preferred to call it by its secondary title 'The Preservation of Favored Races in the Struggle for Life.'

The exaggeration of the significance of the phrase "struggle for life" led many to the belief that this process of struggle did away with the idea of an over-ruling Providence, and particularly of any fostering relationship on the part of a Supreme Being. In this once more as in so many other departments of evolution the Darwinians, so-called, went ever so much farther than Darwin himself, who recognized very clearly and emphasized the fact that the struggle for life did not mean any personal conflict between animals to the death, but on the

contrary such reaction of vital forces to the environment in which the animal was placed has brought out all its powers and gave it a higher vitality than it would otherwise have had. As Huxley said, "Life is a game infinitely more complicated than chess and the player on the other side is hidden from us." "We know that his plays are always fair, just and patient. To the man who plays well the highest stakes are paid with that sort of overflowing generosity with which the strong shows delight in strength." This is a much better picture of the struggle for life than many of those given by the Darwinians and even by Huxley himself when he was in ultra-Darwinian mood.

Biological developments have served to minimize the place of the struggle for life and to emphasize mutual aid as a factor in the process of evolution. While the idea of the struggle for life dominated biology it seemed to many as though evolution had been handed over to blind forces, largely composed of strength and the advantage which might give to the stronger animal. An exaggeration of the significance of the struggle for life against which Darwin had warned, but which was taken up by the Darwinians as representing the most important chapter in biology, made a great many people believe that the law of nature was that the stronger survived and that the weakest must go to the wall, that nature had no care for the individual, but only for the race, and that life was just a huge gory spectacle of death inflicted on living things by other living beings that happened to have secured the advantage over them. Even Huxley, usually so careful, was carried away by this view and in his essay on "The Struggle for Existence in Its Bearing upon Man," suggested that "From the point of view of the moralist the animal world is about on the same level as a gladiator's show. The creatures are fairly well treated and set to fight; the strongest, the swiftest and the cunningest live to fight another day. The spectator has no need to turn his thumb down as no quarter is given."

Russian biologists, in the face of the immense difficulties for living things provided by the severe climate of their country, came to recognize early that it was not the individual of greatest strength that always survived, but that nature provided a great law of helpfulness among the animals. They called attention then to the principle of mutual aid as of probably more importance than the struggle for life as a factor in evolution and it has now come to be recognized that practically all living things have instincts of mutual aid that are extremely precious for them. The smallest living beings, the insects, frankly live community lives for mutual protection, not only against enemies but against the vicissitudes of climate and for the conservation of food. The smaller mammals often live in villages, so-called, or groups that prove distinctly helpful. Even the larger mammals possess the same precious instinct, and wild horses herd together for protection against packs of wolves which hunt together because thus they are able to overcome even the very large animals. A drove of wild horses, when attacked by a pack of wolves, gather in a circle, heads toward the centre,

leaving a space on the inside for the foals and presenting on the outside to their enemies only a battery of heels.

Cows herd together and practically all the ungulates and even such huge beasts as the elephants protect the young by traveling in groups sometimes containing as many as 20. When attacked by one of the big cats, the lions and the tigers, which find baby elephants particularly a toothsome morsel, the old bull elephants on the outside of the herd prove finely capable of affording protection. Far from competition within the species being the law of biology, mutual aid is a deeper instinct in most cases, and very rarely does it happen that animals of the same kind struggle with each other for sustenance, except in cases of famine or when a mother under difficulties is seeking food for her young. Under these conditions the moral law does not hold among men, though the exceptions only prove the rule of the existence of law, and among animals these rather striking exceptions prove that there is a law or instinct of mutual aid by which the animals help each other very materially.

Two things are necessary for the preservation of species. One is food provision and the other is propagation of the race. Food provision under certain circumstances may necessitate the struggle for existence, but the propagation of the race involving as it does the existence of small weak animals necessitates a law of mutual aid and such is actually found to exist. The overemphasis on food provision and the failure to appreciate at their true value the conditions necessary for raising the young weak animals led to an unfortunate misunderstanding in biological science. As Prince Kropotkin suggested "men came to conceive the animal world as a world of perpetual struggle among half starved individuals, thirsting for one another's blood. They made modern literature resound with the war cry of 'woe to the vanquished' as if it were the last word of modern biology. They raised the 'pitiless' struggle for personal advantages to the height of a biological principle which man must submit to as well, under the menace of otherwise succumbing in a world based upon mutual extermination." What we have found instead of "nature red in claw and tooth" is the great principle of charity, or the dearness of fellow-beings existing all over nature. The animals help each other, many of them delight to play with each other and animal sports are common, they care above all for the young and the weaklings and for whatever of evolution has come this has been a prominent factor. The struggle for existence is incidental to life but the great law of mutual aid is a fundamental instinct in living beings, a basic anticipation of the law of charity among men which though often violated remains deep in human hearts as the impress of brotherhood.

The theory of evolution and of descent was very seriously disturbed by Weismann's injection into the discussion of the principle of the non-inheritance of acquired characters. It was easy to theorize that anything acquired by an animal in its struggle for existence would make it more likely to be preserved and this would give the next generation a better chance and would be passed on in ever more favorably modified forms to succeeding generations until

a new species would result. Once it came to be acknowledged however as it had to be, that acquired characters are not transmitted, or so rarely as to be quite an exception to the order of nature, then this scaffolding of theory collapsed, leaving some other explanation of the gradual improvement of living things to be evolved. As pointed out by Driesch the only thing that would explain the upward steps in descent is that definite heightening impulses were put into living things from without with the purpose that they should improve in order of being. In this too modern science finds itself under the necessity of recurring to a creative impulse, a creative evolution, such as was included in the explanations of the great philosophic fathers of the Church. Darwin in his 'Descent of Man' said "The birth both of the species and of the individual are equally parts of that grand sequence of events which our minds refuse to accept as the result of blind chance" (Vol II, p 396).

The argument from design in the world for the existence of a Creator is now actually stronger than ever in scientific minds, and a review of all the purposes that exist among living things makes it quite impossible to believe that they were developed without a Designer. The telling arguments against ultra-Darwinism, the evidence that the struggle for existence and natural selection are not only not exclusive factors, but not even important elements in the differentiation of species, have been found in those domains of creation which exhibit the strongest proofs of design. The story of the complex instincts of many animals and particularly the insects make it very clear that they could not have come into existence by any mere chance, that is, purposeless succession of events, and least of all by any accumulation of minimal fortuitous changes which finally modified function and organ to the extent needed for the perfecting of instincts as we know them. Insects would have been handicapped rather than favored in the struggle for life during the intermediate stages of the development of these instincts and the apparatus connected with them. They would therefore have perished before the instincts had become useful. Fabre, the great French entomologist whom Darwin proclaimed "an incomparable observer," has been the strongest opponent of natural selection or chance being in any way responsible for insect instincts. He insists that it is quite impossible to conceive of these instincts coming into existence except as the result of design. Fabre, discussing the modern theory of instinct, does not hesitate to say that "theories of atavism, of natural selection, of the struggle for life cannot interpret it reasonably." He even went so far as to add with regard to theoretic explanations of the life and instincts of the insects—and surely no one had a better right than he to an opinion on this subject—that he saw in them "no more than an ingenious game in which the arm-chair naturalist who shapes the world according to his whim is able to take delight but in which the observer, the man grappling with reality, fails to find a serious explanation of anything whatsoever that he sees." For Fabre every portion of the insect world is a manifestation of design. "The wing of a cricket, that wonderful piece of lace work emerging from a tiny sheath, speaks to us of

another Architect — the Author of the plan according to which life labors.”

Regeneration is the other phase of biology which after instinct has served to make it very clear that any chance result of the struggle for life could not serve as an explanation of biological developments. Professor Thomas Hunt Morgan of Columbia University did not hesitate to say that there are “insurmountable objections to the view that the process of regeneration can have been produced by natural selection.” He quotes Driesch that “We can only reach a satisfactory view of the phenomena (of ontogeny) when we introduce the word purpose. This means that we must look upon ontogeny as a process carried out in its order and quality as though guided by an intelligence.” Teleology then has come back with redoubled force, and anyone who is not willing to stop short of our ordinary processes of reasoning in matters of science must recognize the existence of design and the constant manifestation of purpose in living things around us.

Once this is admitted the reversion to the old Christian doctrine of Creation and of conservation in the sense not only of preservation but of the provision of such additions to energy as may be needed for developmental purposes becomes imperative. These are really successive creations beyond nature’s unaided powers. It is true that many scientists refuse to take the logical step in this direction, but it seems clear also that their determining reason for doing so is that they cannot bring themselves to revert to the conservative position of the older time. Weismann for instance suggested that if there was no such thing as spontaneous generation scientists would have to admit creation. He confesses frankly that all the scientific evidence of the present time is distinctly against the occurrence of spontaneous generation, yet he insists that it is the duty of scientists to accept abiogenesis rather than to concede the necessity for creation. With creation as the beginning of life and this origin of “the seeds of things” with the absolute necessity for some extraordinary intervention to bring about the differentiation of man the thinker from the animals, the necessity for a creator is affirmed by science; hence the declarations to this effect made by many distinguished scientists of the 20th century. Indeed the greater the scientist the more conservative is his position in this matter as a rule. Evolution so far from contradicting Christian teaching has simply served to make clearer the process by which man’s origin was brought about and his relationship to the world around him. Absolute freedom is left for further research in speculation along these lines and Catholic biologists particularly have never felt themselves hampered in the slightest degree by their faith or by the teaching of the Church in the matter.

Many students of science and particularly readers of popular science have become persuaded that the so-called biogenetic law gave absolute assurance not only of man’s descent from the animals but of his origin from a single cell being and his progress through the various forms of life up to his present physical status. The human, like other embryos, is supposed to pass through stages which indicate very clearly that it follows the law “ontogeny recapitulates phylogeny.” As Koken remarked

very justly, the so-called biogenetic law originated in a superficial view of facts. The more embryology has been studied the less scientists have been willing to accept it. Oscar Hertwig insists that in any statement of the law we must leave out the words “recapitulation of forms of extinct ancestors” and substitute for them “repetition of forms regularly recurring in organic development and advancing from the simple to the more complex.” Almost needless to say this destroys the original significance of the law. There is scarcely any question now among biologists that the stages noted in the embryonic development of man, or of any other animal, are there not because they serve to record a repetition of ancestral forms, but it is definitely taught that they are there because they are needed for the existence and development of the particular individual at that time. It happens that they resemble similar stages in other and sometimes much simpler creatures, but that does not justify the leap to the conclusion that there is any such connection as would be indicated by a law of cause and effect between such similar forms. About all, as pointed out by Weismann, “the resemblances between the human embryo and that of the other vertebrates are so superficial that His, W. von Bischof, Karl Vogt, and many other recent and thorough students of comparative embryology, have protested against Haeckel’s views regarding these resemblances as phylogenetically significant identities.” He concludes “Nothing but gross want of knowledge can excuse a man at the present day in bringing forward this *argumentum ex ignorantia* in support of the descent of man from beasts.” The recapitulation theory has been a favorite source of arguments in education, the social sciences and other scientific modes on which the theory of evolution was thought to throw great light. On it has been made to depend many of the unfortunate applications of the evolutionary theory. Professor Kellogg suggests that “the recapitulation theory of Fritz Muller and Haeckel is chiefly conspicuous now as a skeleton on which to hang innumerable exceptions.”

Conservative Christian views with regard to the origin of man have been still more strongly confirmed by the recent immense developments of the science of archaeology and the increase of our knowledge of the story of man’s existence, not from theory, but from actual remains obtained in the course of excavation. Under the influence of the theory of evolution as a background of their knowledge the last generation of the 19th century were persuaded that human beings were in process of making wonderful progress which could be traced almost from generation to generation and surely from century to century. Scientific archaeology has made it very clear that man at any time in his history when he was interested in any work was capable of doing wonderful things which stamped him as separated by a very great gap from the animal. Succeeding generations of men have often utterly failed to advance above their forebears as we know them by actual remains, but on the contrary degeneration has been at least as common a rule in history as progress. The whole question as to whether mankind has ever made any progress has come up and Flinders Petrie, acknowledged as the authority in Egyptology, does not hesitate to

say that "what strikes us most is how very little man's nature or abilities have changed in 7,000 years, for what he admired we admire; what were his limits in fine handiwork are also ours . . . So far as human nature and taste go man is essentially unchanged in this interval."

If man's origin was an act of creation due to the breathing of something Divine that made him like his Creator into his animal body, we might expect to find in him something like this permanency of status. This rather surprising contradiction of the ordinarily accepted idea of facile progress has been strikingly confirmed by the further advance made in archæology in the study of the cave man. The excavations in the Dordogne and in western and southern France and northern Spain have completely contradicted the idea that man began low down in the scale of being, scarcely above the beasts, and gradually climbed up. They have shown on the contrary that the very first man of whom we have any definite records many thousands of years ago was the intellectual and the spiritual brother of man as we know him now.

The scientific fallacy which has traced man's gradual development from a status just above that of the beast to his present high state of civilization has been due to neglect of the real significance of human life. In the utilities man began low down in the scale and had to develop gradually the things that would help him in his physical life. The notion that this was the only side of man that could possibly have been developed in those early days and that his higher æsthetic evolution could only come much later was entirely an assumption. It led scientists to conclude that the history of man as a tool-maker and a tool-user represented the progress of humanity. What was revealed by the discoveries made in the cave dwellings was that man cultivated first the arts and gave play to his sense of beauty and only later turned to the development of the utilities. Before man was a carpenter and made himself artificial houses to live in, dwelling in the caves that he found so convenient, and before he was a tailor and fashioned his garments to facilitate his work, or a farmer to till the soil and give himself leisure between sowing and harvest, he was an artist and an artistic craftsman whose work now revealed to us commands the reverent regard of the modern world.

When it was first discovered that there were many remains indicating that a number of generations of man had dwelt in the caves of what are now France and Spain the conclusion was jumped to at once that the cave man stage of existence must represent a period in which men were just a little higher than the animals. They were crafty enough to displace the beasts from their lairs in the hillsides and cunning enough to keep them out. Scientists in their eagerness to confirm the theory of evolution went much farther even in this assumption. They represented the cave man as the lowest of savages, quarrelsome, utterly selfish, with no interests except those of his body, ruthlessly ready to fight with his kind on the slightest provocation or even without provocation if he felt that he had the strength or the chance to kill without danger. A favorite theme was that he dragged his female home by violence to keep her as his own, to bear his burdens and

his children, the one saving quality in the picture being his care for his children, though even this was supposed to be neither consistent nor continuous.

This was the supposedly scientific picture of the cave man that was popularized and the general public has as yet no idea apparently that the discoveries of actual remains in the caves completely contradict this theory. Three modes of art were found in the caves, the movable art, consisting of various utensils decorated prettily, the mural or parietal art of pictures made on the walls of the caves to which more recent discoveries have added the plastic art of rock sculpture and molded clay. The engravings on bones and horns and sometimes on stone implements revealed that a real artist was at work in this olden time. He was a man who saw clearly and could reproduce with fine fidelity often by means of a very few lines what he saw. His work while primitive was not crude, but anticipated in many ways modern impressionistic art, the latest phase of artistic development. There must have been a good many men of the time capable of doing excellent work in this line for copious remains in many places and even at different horizons, which indicate intervals of generations, have been found.

What is extremely interesting is that the cave man should have tried to make beautiful even the every-day utensils that he handled and that he was willing to spend a good deal of time and care in their decoration. One suggested criterion of cultural advance among men has been that "there is no culture in the hearts of a people until the very utensils in the kitchen are beautiful as well as useful." The cave man judged by this criterion is rather in advance of than behind most of the peoples of history in higher human development. His cave home we have come to recognize especially after trench experience was healthier than the dwellings of the great majority of the human race at the present time, not alone the poor, but even the rich. He tried to make his home a place of beauty for himself and his family. If we are to judge by how such a thing comes about in the history of long after times, we should be forced to the conclusion that it was the cave woman who somehow had succeeded in securing the surroundings of artistic quality for herself and the children who had to spend so much more time at home than the cave man himself.

If there had been nothing but the movable art of the caves that in itself when properly appreciated would have completely corrected the notion of the cave man as in any way near to the animals. On the contrary he was a modern man in his interest in beautiful things. The discovery of the parietal or mural art emphasized this very strongly. The walls of the caves were found to be decorated in many places with pictures of the animals which the cave man hunted. The evolution of this art has now been traced and it manifestly began in black and white, that is, the gray wall of the limestone cave as the background for deep lines made with a sharp piece of flint and then filled with lamp black as the outline of the picture. The surprise is to find the boldness and sureness of the drawing, the almost complete absence of corrections and the thoroughgoing confidence with which the cave artist must have made his

pictures. He knew exactly what he wanted to reproduce and there was no halting or hesitation about his line work. Modern artists have not hesitated to declare that some of this drawing must be counted among the best that has ever been done, especially when the circumstances in which it was accomplished are considered.

The cave man was not satisfied with these line drawings vivid and expressive as they are. He wanted to reproduce the colors of the animals as he saw them and succeeded in doing so. At first he used only the reds and browns, but after a while also the yellows and many shades of colors. His color sense was evidently exactly like ours and he reproduced the animals as he saw them. The reason why his colors lasted so well during all these years is that they were ground in oil. This inventor of oil painting has made some of the most vivid pictures of animals that have ever been made. He pictures them in all positions, standing, lying down, in all kinds of movement and at bay. He even took advantage of certain somewhat rounded projections of the walls of his cave home to fit his pictures of animals to these surfaces in relief in such a way as to give the impression of plastic work. His power to accommodate his painting to the cramped conditions necessary for this, show what fine command he had over his artistic powers. The men who did this work far from being close to the beasts are quite as high as the men of our time, indeed if anything on the average higher. It is not at all surprising to find that they were magnificently developed and had a skull a little larger than the average of the men of our time.

These pictures were often made on the cave walls at such a distance from the entrance that the darkness was complete. Just what kind of light the cave man used has not been found. It was not torches, for there are no marks of smoke on the walls or ceiling. Sir Arthur Evans, who was president of the British Association for The Advancement of Science, did not hesitate to say in 1916 in his presidential address that the cave man had probably discovered some mode of lighting his cave, or otherwise he would not have been able to do the painting that is actually found there. It would not be surprising if the inventor of painting in oils should have made other inventions. He used fire in many ways and fire is, after all, one of man's greatest inventions.

The savage cave man of theory then so close to the beasts gives place when his actual remains are critically appreciated to a man the equal of any in the history of the race. An artist is at all times the flower of our civilization and evidently many of the cave men were artists. Further discoveries give indications of rather happy domestic life, his wife being pictured as rounded and fat though the cave man himself is muscular and athletic, evidently fitted for the difficult task of hunting the animals. Had his wife been the slave that she is pictured in theory she would not have been anything like the portraits that we have of her. There are manifest signs in some of the drawings of her liking for dress and already in various places there are various fashions with longer and shorter skirts and higher and lower corsages and ribbons and other adjuncts of fashion (Sir Arthur Evans). Above all the

cave man carefully buried his dead with some of their weapons and utensils near them and with other evident indications of his belief that death was not the end of life, but that there was another life. He was perfectly willing to sacrifice some of the finely decorated and well-fashioned utensils that had taken a good deal of time in the making, in order that his dead ones might have near them in the other world their favorite implements of this. In a word archaeology has shown us the first man of whom we know anything definitely, as a reasoning being with a highly developed sense of beauty, with a belief in immortality, with feeling for others, with a compelling tendency to surround himself with beautiful things as far as he could and not with that supposed tendency to occupy himself exclusively with utilities which instead of representing development always indicates a tendency at least to degeneration.

The one question that remains then is whether there is room in Biblical chronology for the record of man as worked out by science. Here once more the conservative views of the early Fathers of the Church are extremely important in enabling us to understand what should be looked upon as the prevailing belief in these matters. The supposed incompatibility of science and faith in the matter is entirely due to a comparatively recent misunderstanding of the Scriptures. Some of the early Fathers of the Church took the days of creation literally, but the Alexandrian Fathers who faced these problems in true philosophic temper interpreted the days of creation ideally, taking the words of Genesis as a human mode of speech so that men might understand what was expressed in terms of their previous knowledge. Such distinguished Christian philosophers as Clement, Athanasius, Cyril and Origen, as well as Saint Augustine, taught that creation was a single act. Augustine as we have seen declared that "the seeds of things" were first created and then went on developing because of the living power put into them.

The Fathers manifestly did not feel that a definite date for the creation of man was set by the account in Genesis. It was Archbishop Usher under post-Reformation influences who first calculated that the creation of Adam was 4004 B.C. Indeed the literal interpretation of the rather vague wording of Scripture with regard to many things is quite modern as a rule. As in the question of a universal deluge, which is not Biblical, more careful study of the scriptural text shows that there is no good reason for any such limitation of time as Usher suggested. There is absolute freedom to discuss the age of man on earth as far older than any such date. Rev. Father Obermaier and Abbé Breuil, to whom we owe more of our exact knowledge as to the cave man and our earliest ancestors than any others, have discussed the probable date of this dwelling in caves very fully. Obermaier thinks that 50,000 years might be necessary to include all phases of development that have thus far been unearthed. Abbé Breuil is of the opinion that 20,000 years would be quite sufficient for all that recently discovered facts as to man's development would demand. Their opinions deserve the highest consideration from students of science. The lower figure is confirmed by the conclusions of Prestwich, a well-known authority on geology, who



limits the time since the Glacial period to 25,000 years and man is surely post-glacial.

Many presume that at least modern science has completely obliterated the old-fashioned notion that man was the center and the culmination of creation for whom other parts were made and to whom their activities were mainly directed. Alfred Russell Wallace, however, in his volume, 'Man's Place in the Universe,' has re-established that old idea on the firmest of modern scientific and evolutionary bases. Surely no one can talk with more authority in the matter than the man who with Darwin discovered the principle of natural selection. Wallace goes so far as to say «and is it not in perfect harmony with this grandeur of design (if it be design), this vastness of scale, this marvelous process of development through all the ages, that the material universe needed to produce this cradle of organic life and of being destined to a higher and a permanent existence, should be on a corresponding scale of vastness of complexity and of beauty? During the whole process of the rise and growth and extinction of past forms the earth has been preparing for the ultimate man—much of the wealth and luxuriance of living things, the infinite variety of forms and structure, the exquisite grace and beauty in bird and insect, in foliage and flower, may have been mere by-products of the grand mechanism we call nature—the one and only method of developing humanity»

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**MAN, Isle of.** See **ISLE OF MAN.**

**MAN, Prehistoric Races of.** The knowledge that there actually were prehistoric «races» of man, physically different from any of the racial groups living today, dates back scarcely as far as the middle of the 19th century. Prior to that time the dawn of human existence was commonly assumed, even by many scientific men, to have been coincident with the beginning of recorded history, some 6,000 or 7,000 years ago.

Even Georges Cuvier, the great French paleontologist of the early 19th century, was intolerant toward the idea that fossil human bones might be found. However, during the second quarter of the 19th century ancient stone weapons were found in western Europe actually mingled with the bones of extinct beasts of the Diluvial Age. Shortly thereafter fossilized human bones were similarly found in the floor of a cave, together with bones of elephant, rhinoceros, and other beasts long extinct in Europe. But these human bones, though very ancient, were not unlike those of modern man. Then in 1856, occurred the epoch-making discovery of Neanderthal man, a low-browed creature clearly human but so unlike any known race of man that it was made the type of a new species, and in 1891 remains of Pithecanthropus, the famous «Ape man of Java», a barely human creature, were unearthed. Beginning with the early years of the present century discoveries in this field have been numerous in many parts of the world. These include, first, fossilized bones of ancient men and of the animals they hunted; second, archaeological relics such as stone implements, etc., which yield information regarding the cultural evolution of prehistoric men; and third, advances in geological knowledge which enable us to measure their antiquity and to know the physical conditions of the various periods in which they lived. No fossil bones of ancient man are known from deposits older than the early phases of the Pleistocene epoch, also called the Glacial or Ice Age; though it is generally admitted that the hominid and great ape branches diverged from a common stem during Tertiary time.

This is not the place for a discussion of the Pleistocene epoch or Ice Age, or of the disputed chronologies of its several cold and warm phases, but it may be said that estimates of the total duration of the Pleistocene vary from 500,000 years to 1,500,000, with the weight of opinion favoring a median figure or approximately 1,000,000 years. Most authorities recognize in Europe four periods of lowered temperature with glacial advance, each followed by a warmer interglacial phase. The glaciations are called, beginning with the oldest, the Günz, Mindel, Riss, and Wurm, or simply the 1st, 2d, 3d, and 4th. The second was far the most extensive. The fourth glacial advance is believed to have attained its maximum about 30,000 or 35,000 years ago, so that present time may be considered to be late in the fourth postglacial phase.

This article will be devoted chiefly to brief discussions of the various prehistoric types thus far known, stressing their physical features and their inferred relationships. Archaeological evidence will be touched upon only incidentally as it has little bearing on questions of race. A number of discoveries, which for one reason or another do not seem to be important, will be omitted.

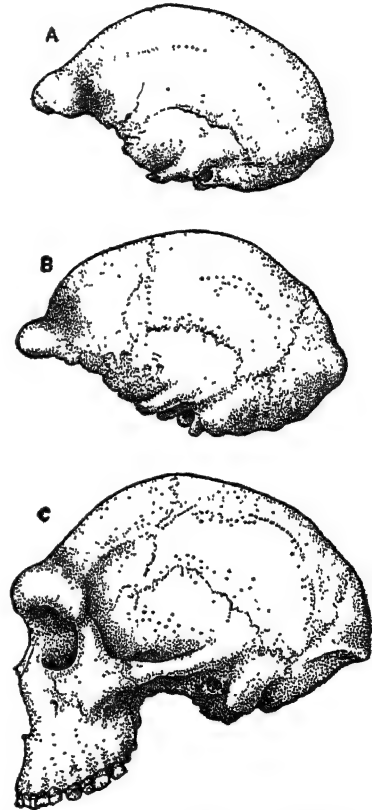
It seems best to begin with earlier and more primitive races; then to discuss those which are somewhat more advanced but still below the level of *Homo sapiens*, which will be treated last. Discoveries of prehistoric types are usually sporadic and accidental and in many or most cases the material is fragmentary and incomplete. It must be admitted that actual knowledge of phylogenetic relationships and genealogical successions of these ancient human types is extremely meager and tentative, but it is grow-

ing steadily as new evidence is brought to light. It is important to realize clearly that these ancient human «races» were not limited in their geographic distribution to the particular region where the known fossil specimens were found, and also that the chronological range of such races and species probably comprised many tens of thousands of years in every case.

**Ape Man of Java (*Pithecanthropus erectus*).**—The most primitive member of the human family thus far discovered is widely known under the names of «Trinil man» and the «Ape man of Java». In 1891-92 Dr. Eugène Dubois of Holland unearthed in the dry bed of the Solo River near the village of Trinil in central Java, a fossilized upper part of a cranium, two molar teeth, and a thigh bone. All these fossils were clearly of primate character and Dubois believed them to be parts of a single individual. The thigh bone was essentially manlike, though with some peculiar features. The cranium was very small, depressed in form with an extremely low, narrow, and retreating forehead with a prominent ridge above the eyes. The cranial capacity is now known to be about 940 cubic centimeters, which is barely within the minimal limit of normal human cranial volume, but far in excess of that of any ape. The form of the brain is also essentially human and markedly unlike that of any ape. Dubois, believing that his Javan discovery represented the realization of a hypothetical missing link which had been postulated in 1868 by Ernst Haeckel and called by him *Pithecanthropus alalus* (speechless ape man), adopted this name for the genus of his Javan find, but substituted the specific name *erectus* in view of the fact that the form of the thigh bone showed that its possessor walked upright. Dubois characterized the creature as a «man-like transition form» and «the precursor of man». The fossils were later brought to Holland where they naturally aroused world-wide interest and evoked spirited discussion. Some authorities held that they belonged to an ape, but a more manlike ape than any hitherto known; others considered them the remains of a lower type of man; while a third group agreed with Dubois that he had discovered a transitional form or «missing link.» The two molar teeth have been shown recently to belong to an extinct Javan orangutan. As for the femur, though the association with the skull is not certain, there are no facts which preclude it. For 45 years the Dubois discoveries comprised the sum total of evidence regarding *Pithecanthropus*, but from 1936 to 1939 three additional crania and portions of a palate, a lower jaw, and several teeth of this type were found in Java by G. H. R. von Koenigswald. One of these was the fossilized cranium of a child of about two years, the low forehead of which already shows the beginning of a brow ridge. Further explorations yielded two adult skulls, one of them almost identical in form with the Dubois skull but more nearly complete and somewhat smaller, with a cranial capacity estimated to be under 850 cubic centimeters, considerably below any normal human skull. In general, it may be stated that *Pithecanthropus erectus* is the most primitive member of the hominidae thus far discovered, barely human and perhaps too apelike to merit inclusion in the genus *Homo*. H. de Terra, who has made extensive correlation studies of the Asian and Javan Pleistocene, believes that

*Pithecanthropus* had a range from very early Pleistocene times, perhaps 600,000 years ago, to the second pluvial (equivalent to the European second glacial) and possibly the second interpluvial. If this is correct, the *Pithecanthropus* group may have existed for 200,000 years or even longer. Java was at that time, or had been earlier, an extension of the Asian mainland, part of a larger Malay Peninsula, so that *Pithecanthropus* may be considered essentially a southern Asian form. There is no indubitable evidence as to the culture of these primitive hominidae, but it is known that Peking man, a type only slightly more advanced, fashioned stone implements of a crude sort.

The important question regarding *Pithecanthropus* is: Does he represent an ancestor of any higher human type or does he exemplify merely the end of an early hominid branch which died out? A few years ago many authorities favored the latter alternative, but the discovery of the closely similar Peking man and the recent finding of the somewhat more advanced Solo man in Java (both described below) lend probability to the view that *Pithecanthropus* may represent a precursor of higher types.



- Three primitive skulls drawn to same scale.  
 A. Ape man of Java (*Pithecanthropus erectus*). Second adult skull, found 1937.  
 B. Peking man (*Sinanthropus pekinensis*), China. Skull found 1929.  
 C. Rhodesian man (*Homo rhodesiensis*), Africa. Skull found 1921.

**Peking Man (*Sinanthropus pekinensis*).**—For many years certain paleontologists have recognized evidence indicating that the human

and simian branches diverged from a common stem during Tertiary time, probably in Asia. Many genera of fossil anthropoids are known from Miocene and Pleistocene formations in India. In 1927 a well-preserved fossilized hominid molar was found in cave deposits at Choukoutien, 37 miles southwest of Peking. On the sole basis of this tooth the late Dr Davidson Black proposed a new hominid genus and species which he named *Sinanthropus pekimensis* (Chinese man of Peking). This apparently rash venture in taxonomy was soon vindicated by the discovery (1929-30) of two nearly complete crania and several jaws and teeth almost as primitive as *Pithecanthropus*. The Choukoutien remains are found in a series of clefts or fissures in Ordovician limestone which represent the remains of a cave of Middle Pleistocene time which was frequented by these early hominids and also by various animals. Geological and paleontological evidence indicates that these cave deposits are perhaps a little later than the Trinil zone of Java. Their age probably corresponds to the second glacial advance in Europe with an estimated antiquity of some 500,000 years. Professor Black published a splendid series of studies of Peking man but unfortunately he died in 1934. He had a most able successor in Prof. Franz Weidenreich who has continued the explorations at Choukoutien and published many masterly reports on the material. In all, five fairly complete skulls had been found up to 1936, together with many jaws and teeth but very little of other skeletal parts. The remains found represent probably not less than 40 individuals. There is convincing evidence that most of these people were killed and the severed heads carried into the cave. All of the skulls had been broken open at the base apparently for the extraction of the brain, giving reason to suspect that Peking man practiced cannibalism. He certainly had mastered the art of making fire, fashioned extremely crude implements of chipped stone, hunted deer and other animals, and utilized lower jaws and pieces of deer antler as tools. Hackberries were carried into the cave and cracked to extract the kernels. The *Sinanthropus* skulls have a small but variable endocranial capacity; one of them measures only a little over 900 cubic centimeters or about the same as *Pithecanthropus*. But others are larger, the largest measuring 1,200 cubic centimeters, thus being well within the normal range for *Homo*. The extremely depressed vault and similar heavy brow ridge give the skulls a striking resemblance to Neanderthal man, but in one particular they are remarkably like *Pithecanthropus*: namely, in the fact that the cranium is widest near the level of the ears and becomes narrower higher up in the region where the brain case of *Homo* is widest. There is no chin prominence and the teeth are definitely primitive. It cannot be asserted positively that *Sinanthropus* was an ancestor of any later type but, as Professor Black asserted, «its dental characters certainly seem to indicate that *Sinanthropus* could not have been far removed from the type of hominid from which evolved both the extinct Neanderthal and the modern *Homo sapiens*.» Later researches have fully confirmed this view.

Professor Weidenreich, the leading authority on Peking man, holds the opinion, based on certain features of cranium, jaws and teeth,

that the Mongoloid branch of recent man is more closely related to *Sinanthropus* than are the Whites or Negroes.

**Heidelberg Man** (*Homo heidelbergensis*).—A human lower jaw found in 1907 in a sand quarry at Mauer near Heidelberg, Germany, remains the most primitive and the oldest human skeletal relic found in Europe with the somewhat doubtful exception of Piltdown man, to be considered later. The jaw was found at a depth of 79 feet below the present surface, at the very bottom of a 50-foot layer of ancient river sand which for years had yielded fossilized bones of many species of early Pleistocene animals, notably the straight-tusked elephant, the Etruscan rhinoceros, and the lion. There is some difference of opinion as to the exact geological age of these fossils, including the human jaw. They cannot be later than the second interglacial (Mindel-Riss) interval, and recent paleontological studies tend to place them as early as the first (Gunz-Mindel) interglacial which, if true, would date this jaw as early as the known finds of *Pithecanthropus* and earlier than *Sinanthropus*. However we must not overlook the possibility that the chronological ranges of these three types may have overlapped. The Heidelberg or Mauer jaw is extremely massive, the chin prominence is entirely lacking, and the ascending branch is broader than in any known human jaw, but, despite absence of chin, all the essential features are definitely human. The form of the dental arch is completely manlike, not at all apelike, and even the chinless front of the jaw is quite different from the corresponding part of an ape. The teeth are rather small for so massive a jaw, and the canines are no larger than in many modern men. Comparing it with the other very early hominid types, we find that some of the jaws of Peking man approximate it rather closely, though the teeth of Peking man are definitely more primitive. The recently discovered jaws and teeth of *Pithecanthropus* also seem to be less completely human. Prof. O. Schoetensack of Heidelberg, who described the specimen in 1908 and named it *Homo heidelbergensis*, advanced the view, which has been very generally accepted, that Heidelberg man represents an ancestral pre-Neanderthal type or as H. F. Osborn expresses it, «a Neanderthal in the making.» Other paleontologists, considering the Heidelberg type too primitive to be included in the genus *Homo*, later proposed such generic names as *Palaeanthropus* and *Protanthropus*, but the original name given by Schoetensack is almost universally used. No artifacts are definitely associated with Heidelberg man, but it is inferred that at best he may have attained to the pre-Chellean or Chellean culture level. There is surely no reason to believe that he had not advanced at least as far as Peking man. The famous jaw of 1907 remains the sole relic of Heidelberg man but its importance has been greatly enhanced by the discovery, more than 20 years later, of the probably closely related Peking man and the new material of the Javan *Pithecanthropus*. These three types, all of rather early Pleistocene times, representing the oldest and most primitive members of the human family, may well be grouped as protanthropic hominids. Their distribution accords with the view that various prehuman stocks radiated from a region in central or south central Asia, such as northern

India where Miocene and Pliocene rocks have yielded many fossil anthropoids. Another form, possibly but doubtfully belonging with these protanthropic men, is represented by two badly fragmented skulls found by L. Kohl-Larsen in 1935 in northern Tanganyika, East Africa. The more nearly complete of these skulls has been restored by Weinert (1939) in such fashion as to give it a close resemblance to Pithecanthropus and Sinanthropus. He named it *Africanthropus njarasensis*. The geological incidence is uncertain but it appears to be late Pleistocene, long after the time range of any of the three protanthropic types discussed above, and the inclusion of «Africanthropus» in that group on present evidence does not seem to be warranted. It may be noted that several kinds of fossil anthropoid apes have recently been found in Africa, including several which are much more manlike, as indicated by their skulls and teeth, than any living apes, though they are geologically too late to have a possible place in the ancestral line of any human type. The fact that the three somewhat similar protanthropic types (Java, Peking, and Heidelberg) were widely scattered toward the periphery of the great Eurasian land mass early in Pleistocene time (with the «Africanthropus» in Africa as a very doubtful fourth), all of them in regions later inhabited by more advanced human types, suggests that the differentiation of man into the chief ethnic divisions known today, namely the black, yellow-brown, and white, may have preceded the attainment of the *Homo sapiens* status.

According to this concept the species *Homo sapiens* does not represent the collective progeny of a single primitive hominid stem which secondarily branched into several races as has commonly been assumed, but rather a composite species, a synthesis of three or more primary protanthropic types, the progeny of none of which persists in pure form today. All modern «races» show intermingling, some much more than others. Numerous competent ethnologists favor this view.

**Neanderthal Man** (*Homo neanderthalensis*, King 1864) = (*Homo primigenius*, Wilser 1897).—This was the first ancient type to gain recognition as a species distinct from *Homo sapiens*. The discovery which led to this identification and on which King's specific name is based was made in 1856. It consisted of the top of a skull and a number of other bones which were dug up in the floor of a limestone cave in a small ravine known as the Neanderthal (Thal — valley or ravine) near Düsseldorf, Germany. The bones showed a number of unusual features, the skull especially being remarkable for its depressed vault, low, retreating forehead and heavy cornicelike ridge overhanging the orbits. For some years it was variously regarded as the skull of an idiot, as a pathologically deformed specimen, and as belonging to a «barbarous and savage race.» But it was recognized as a distinct human species in 1864. It is a remarkable fact that a female skull of the same species found in a cave at Gibraltar in 1848, eight years before the Neanderthal discovery, remained practically unknown until 1907 when it was shown to be of the Neanderthal species, of which by that time a number of other remains were known. Neanderthal man is now by far the best known of all types of

Pleistocene humanity. His remains, chiefly from limestone caves and rock shelters, are in many cases thoroughly documented by the bones of contemporaneous animals and by associated stone implements of the Acheulean and especially of Mousterian culture which represent his handiwork. Germany, Belgium, France, Croatia, Spain, Italy, and recently Palestine have all yielded skeletal material and Mousterian implements, and the latter are also known in North Africa. A recent discovery of especial importance is a practically complete skull of a Neanderthal child of about eight years, together with other parts of the skeleton and Mousterian tools found in 1939 in a cave in southern Uzbekistan in central Asia. The particular significance of this find is that it extends the known range of Neanderthal man much farther eastward, and indicates that he was Eurasian rather than merely European. As stated above, Heidelberg man has commonly been considered a pre-Neanderthal form but the much more completely known Peking man is at least as well qualified to be a Neanderthal precursor. The site of the Uzbekistan discovery in central Asia is geographically almost exactly midway between Peking and Heidelberg.

Until rather recently Neanderthal man was supposed to represent a single type, especially identified with the fourth or Riss glacial epoch and with the Mousterian flint industry. This group, which we may call the «typical» Neanderthal form, is represented by the original Neanderthal specimen, two skeletons from Spy, Belgium, and the skeletons from Chapelle-aux-Saintes, Le Moustier, La Ferrassie and other well-known examples from France and other parts of western Europe. These typical Neanderthals are all heavily built and of short stature, usually not more than five feet, three or four inches, the females somewhat less. In general, the bones are extremely massive. The skull is of strikingly unique form with a depressed vault, a low, retreating forehead and an especially notable feature is the heavy supra-orbital ridge, very similar to that of Peking man. The cranium, however, is usually large, in some cases with a capacity well above the average of modern man, though some female skulls are rather small. The cheek bones slope obliquely backward and the depression in the cheek region known as the canine fossa is lacking. The orbits are round and extremely large. The nose must have been prominent, not flattened, but extremely wide. The mastoid processes are very small. In back view the cranium has a peculiar form which has been described as «bun-shaped.» The lower jaw shows no chin or the merest suggestion of a chin. The teeth are large in general but the canines are not relatively so. A peculiarity of the molars in many cases, especially the lower molars, is an enlargement of the pulp cavity which extends downward into the conjoined roots, a dental form called «taurodont» (bull-tooth) by Sir Arthur Keith. This condition was also sometimes present in the much earlier Peking man. All in all, the Neanderthal skull is so distinctive in almost every feature that it can be identified at a glance. Several other parts of the skeleton show characteristic features but these are not so striking as those of the skull. Study of the skeleton gives no warrant for describing the Neanderthal people as walking semiupright and

as having enormously thick, gorilla-like necks and imperfectly opposable thumbs, as some writers have pictured them. The massiveness of the limb bones is marked and the forearm and shin bone are short in comparison with arm and thigh. The hands and feet were almost as in modern man. As regards cultural status, the phase of Paleolithic flint industry known as Mousterian, with its skillfully made axes, scrapers, spearheads, borers, etc., is definitely associated with Neanderthal man. Remains of ancient hearths show that these people possessed the art of making fire, probably an inheritance from protanthropic ancestors, and in a number of cases the dead had been given careful ceremonial burial in caves and rock shelters, together with flint implements and parts of the bodies of animals, evidently intended for the use of the departed. Neanderthal man has usually been identified with the fourth (Würm) European glacial, but a number of skeletal remains of this type are those of earlier people who are known to have lived during the third interglacial epoch. Examples of these are the remains found in the region of Weimar and Ehringsdorf in Germany, the remains from Krapina in Croatia, and three skulls recently found in Italy. The earlier age of these remains is indicated by geological conditions and in some cases by associated flint implements of the Acheulean culture phase. Some of these are believed to be probably 75,000 to 100,000 years old. A skull found in 1933 at Steinheim, a few miles north of Stuttgart, Germany, is especially puzzling. It is apparently a female skull, obviously Neanderthaloid in general, but it is the smallest known skull of that type and in a number of important features it deviates notably from the Neanderthal cranial pattern and in a few particulars it even approximates *Homo sapiens*. This is the more remarkable in that it is clearly of the Riss-Würm interglacial age and thus very much older than the typical Neanderthals. As some of the cranial and dental features of Neanderthal man are regarded as exhibiting specialization or even degeneration it is possible that the Steinheim specimen may represent an early and more generalized phase in the evolution of that type.

In 1925 a portion of a Neanderthaloid skull was found near the Sea of Galilee in Palestine and in 1932 and shortly thereafter, in a group of three caves at the foot of Mt. Carmel, at least 10 skeletons were found, all or most of them representing intentional burials. Careful study of these remains by Theodore McCown and Sir Arthur Keith shows that while some of them are predominantly Neanderthal, others, apparently of the same period, exhibit a remarkable mixture of Neanderthal and *Homo sapiens* characters. This mixture of characters constitutes a perplexing problem. McCown and Keith believe it represented a rapid local evolution of the sapiens type from the Neanderthal, but another suggested explanation is that the Mt. Carmel population lived at the boundary where two races, already differentiated in different regions, happened to come in contact; but if that is true, the origin of the «higher» type is a problem.

The fate of Neanderthal man is unknown. We know that this race survived until some time after the maximum of the fourth or Würm glaciation, but at a time estimated to have been some 25,000 to 30,000 years ago Neanderthal

man seems to have disappeared as a specific type and to have been superseded by *Homo sapiens*. Unfortunately, notwithstanding abundant speculation, scarcely anything is definitely known regarding the ethnic origins of our own species, perhaps less than is known about the origin of Neanderthal man, for in the latter case there are at least the Peking and Heidelberg types which represent possible ancestors. It was long believed very generally that the Neanderthals were exterminated by early examples of *Homo sapiens* who invaded Europe from Asia or possibly northern Africa bringing with them the Aurignacian culture, but there is no evidence of such a superior race inhabiting these countries at so early a period. Besides, we know now that the range of the Neanderthals included central Asia as well as Europe. Even on the theory of invading conquerors there would probably be some racial mixture, and a number of ethnologists are convinced that some of the Europeans of early postglacial time show evidence of Neanderthal inheritance. One early type of *Homo sapiens fossilis*, sometimes cited as exhibiting this, is the so-called Brunn race, named from a Late Paleolithic site of discovery in Moravia. These were long-headed people with rather prominent superciliary ridges on the brow, but any special relationship to the Neanderthal man is very questionable. At the present time some competent authorities reject the theory of an invading superior race and hold the opinion that *Homo sapiens* represents a direct evolution from Neanderthal man, but this proposition has not yet been demonstrated. One apparent obstacle to the acceptance of such evolution in Europe is the suddenness of the transition. There are no really well-marked intermediate types. In Europe during the Late Paleolithic culture phases several varieties of *Homo sapiens fossilis* existed. One of the older was the so-called Brunn type already mentioned. Another, known from only two skeletons buried in a cave near Monaco and called the Grimaldi race, was believed to be an early negroid type, but it has been shown recently that they probably represent a variant of the Cro-Magnon race. The name Cro-Magnon was first applied to a group of skeletons found in the Dordogne in France in 1868, which were believed to represent a well-defined race of tall people marked by high, capacious cranium, vertical forehead, narrow nose, and prominent chin. With this fine physical type is associated the superior flint implements, carvings, engravings, and cave paintings characteristic of the Solutrean and Magdalenian phases of Late Paleolithic culture. Later studies have demonstrated, however, that the population of Europe in Late Paleolithic showed great variation so that the name Cro-Magnon should probably be used, if at all, in a much more inclusive sense. Prof. E. A. Hooton of Harvard, who has given much attention to the study of Late Paleolithic Europeans, states that he is «so unregenerate as to be sceptical of the reality of the Cro-Magnon race if the term 'race' be used in its proper anthropological connotation.» G. M. Morant, on the basis of craniometric studies, concludes that «the Upper Paleolithic type is modern in almost all respects . . . it resembles . . . the modern dolichocephalic races of western Europe and there can be little doubt that the latter population is directly descended from the earlier.»



**Rhodesian Man of Africa and Solo Man of Java.**—Two examples of ancient hominids remarkable for their similarity, notwithstanding the fact that they inhabited widely separated regions, are (1) the Rhodesian man (*Homo rhodesiensis*), known only from a single skull and a few bones found in 1921 in northern Rhodesia, and (2) Solo man (*Homo soloensis*), represented by eleven crania and two tibiae discovered between 1931 and 1936 in central Java near the village of Ngandong on the Solo River, only six miles from Trinil where Dubois found the first Pithecanthropus skull 40 years earlier. Until the Solo discoveries the Rhodesian man seemed utterly unique, isolated and problematical, but Solo man is so similar in cranial characters that the close relationship of the two types seems beyond question. Of the Solo skulls only the cranial regions were found and all of them had been broken open at the base, apparently for the extraction of the brain, exactly as in the case of Peking man, another example of primitive head hunting or cannibalism. The Rhodesian and Solo skulls show such striking superficial resemblance to Neanderthal man in the low vault, retreating forehead, and heavy brow ridge that some persons consider them to be aberrant African and Javan examples of that type, but the similarities are outweighed by many impressive differences. The apparent likenesses are merely examples of what the zoologists call "parallelism." The cranial capacity is low, in most cases well under 1,300 cubic centimeters. The Solo type which de Terra places in third interpluvial (interglacial) has every appearance of being a true descendant of Pithecanthropus, just as the Neanderthals of Europe and Asia probably evolved from the early and more primitive Peking and Heidelberg types. G. H. R. von Koenigswald, who has made careful studies of Solo man, concludes that "we have in *Homo soloensis* the oldest . . . known representative of *Homo sapiens fossilis*." (The context of this statement indicates that he would include Rhodesian man.) The Solo and Rhodesian men seem to represent an ancient proto-Australoid stage, a sort of transitional form between Pithecanthropus and the later Australian aborigines. Two well-preserved skulls of late Pleistocene age found in southern Australia lend support to this view. One of these is the "Talgai skull" from Queensland, the other the "Cohuna skull" found in Victoria. These are definitely of the same racial type as the modern Australians but more primitive and apparently closer to the archaic proto-Australoids of the Solo-Rhodesian type. No subhuman primates, living or fossil, are known from Australia, and it is practically certain that man of proto-Australoid type migrated to that continent fairly late in the Pleistocene epoch. Java, the home of Pithecanthropus and Solo man, also produced in late Pleistocene time a more advanced type discovered by Dubois at Wadjak in 1889 but not described by him until 1921. The type, based on two extremely massive skulls, was named *Homo wadjakensis* and was placed by Dubois as a proto-Australoid type, but G. Pinkley has shown that the supposed Australian relationship is dubious. There is a possibility that the Wadjak man is Neolithic. Africa has yielded during recent years a number of skeletal remains of late Pleistocene age which clearly belong to *Homo sapiens* but none of these can be definitely related to the

Rhodesian man. Several from South Africa (e.g., the Boskop skull) show such striking likeness in head form to the modern African Bushman as to indicate direct descent of the latter from them, but the ancient skulls are very much larger, which suggests that the Bushman has undergone degeneration in size since late Pleistocene time. Other fossil skeletons, chiefly from East Africa, show unquestionable relationship to the true Negroes. Thus the evidence, scattered and fragmentary though it is, indicates that the true African Negro and the Bushman were distinct types of *Homo sapiens* as long ago as late Pleistocene time.

**Piltdown Man (*Eoanthropus dawsoni*).**—Some species of a human cranium and a part of a lower jaw found in ancient river gravels at Piltdown in Sussex, England, in 1911-12, have evoked more controversy and more legitimate difference of opinion than any other discovery relating to early man. The cranial fragments are essentially those of *Homo sapiens*, their most remarkable feature being their unusual thickness, but the lower jaw, consisting of almost the complete right half and containing two teeth, is strikingly apelike in the chin region and somewhat so in the form of the molars, so apelike, in fact, that had it been found alone, it would undoubtedly have been considered the jaw of a fossil ape. (No fossil apes are known in England but jaws and teeth of large fossil apes, somewhat different from the Piltdown specimen, have long been known from Miocene formations in France and Germany.) Sir Arthur Smith Woodward, convinced that the Piltdown jaw belonged with the cranium despite its apelike character, united these fragments to constitute the type of a new genus and species, *Eoanthropus* (dawn man) *dawsoni*. The association of jaw with cranium as a single type received apparent confirmation from a second discovery in 1915, some two miles from Piltdown, in which a lower molar, practically identical with the corresponding tooth in the famous jaw, was found with some cranial fragments very like the original skull. Unfortunately the geological age of the Piltdown gravels is somewhat uncertain, though competent opinion now places them as early Pleistocene. Many authorities believe the skull to have belonged to a later period and to have become accidentally mingled, perhaps during a freshet, with older gravels and fossils of various ages. The proponents of the Dawn man theory hold, on the other hand, that the Piltdown cranium is not *Homo sapiens* but a vastly older and perhaps ancestral type, an early hominid in which the brain (about 1,240 cubic centimeters) had developed far in advance of the jaws which had not yet progressed beyond an apelike ancestral condition. It may be said in general that the circumstances of the discovery tend to support the validity of *Eoanthropus*, but the fact remains that the association of the apelike jaw with a cranium essentially of *Homo sapiens* type seems grotesquely incongruous. British authorities tend in the main to accept the authenticity of the Dawn man, while many in Continental Europe and America are sceptical, favoring the theory of fortuitous association. It may be remarked that bones and teeth of various other animals were found in the same layer. There is much to be said on both sides of the Piltdown question, which is fully pre-

sented in some of the works listed in the bibliography following this article.

**Prehistoric Man in America.**—This subject can be very briefly treated here as it is now generally admitted that all the American aborigines of both North and South America belong racially to the Mongoloid division of *Homo sapiens* and that their ancestors came from north-eastern Asia (Siberia) to Alaska in the region of Bering Strait after the maximum of the last Pleistocene glaciation. Some probably came by land during a period when there was a land bridge connecting the two continents; others may have traveled over the ice or even by boats. There were probably many migrations at different times, during a long period, but there is wide divergence of opinion as to just how old the earliest evidences of man in America are. Skeletal remains believed to be of the late glacial or early postglacial age have been reported from Florida, Minnesota, California, and from sites in South America but they are all of the Amerindian type and the evidence for their great antiquity is not universally accepted. Apparently much older than any skeletal discoveries thus far made are certain ancient stone points of highly skilled workmanship known as «Folsom points» since they were first found near Folsom, N. M., in 1925. More recently they have been found in other regions of the Southwest, and stone spearheads found mingled with bones of mastodon, elephant, and other long extinct animals show that early Americans hunted these long extinct creatures. The Folsom culture is believed by geologists and physiographers to be at least 10,000 years old and probably considerably older, which places the early immigrants from Siberia to Alaska still earlier, perhaps by several thousand years. In general the anthropologists seem to be content with less impressive chronologies than are the geologists. In any case it is certain that the Mongoloid branch of *Homo sapiens*, like the white and black divisions, was fully differentiated before the first migrations from Asia to America which occurred probably in late Pleistocene time.

See also ANTHROPOLOGY; ANTHROPOMETRY; ARCHAEOLOGY; CIVILIZATION; ETHNOLOGY; INDIANS, AMERICAN; STONE AGE.

**Bibliography.**—Of general works the following may be especially recommended: Boule, M., 'Les Hommes Fossiles' (2nd ed., Paris 1923); 'Fossil Men' (English translation of the same. London 1923); Coon, C. S., 'The Races of Europe' (1939); Hooton, E. A., 'Up from the Ape' (1931); Hrdlicka, A., 'The Skeletal Remains of Early Man,' Smithsonian Miscellaneous Collections, Vol. 83 (1931); Keith, A., 'The Antiquity of Man' (2 vols., 1925) and 'New Discoveries Relating to the Antiquity of Man' (1931); MacCurdy, G. G., 'Early Man' (1937) and 'Human Origins' (2 vols., 1924); Obermaier, H., 'Fossil Men in Spain' (1924); Osborn, H. F., 'Men of the Old Stone Age' (3d ed., 1919); Smith, G. E., 'The Evolution of Man' (2d ed., London 1927); Weinert, H., 'Entstehung der Menschenrassen' (Stuttgart 1938). On prehistoric man in America consult Howard, E. B., 'Evidence of Early Man in North America,' *The Museum Journal*, Philadelphia, (Vol. 24, Nos. 2, 3, 1935); Bryan, Kirk, 'Geologic Antiquity of Man in America,' *Science* 1941 (Vol. 93, pp. 505-514). Monographs have been published on most of the im-

portant discoveries, references to which may be found in the general works named above.

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**MAN WITHOUT A COUNTRY.** The, Few, if any, short stories written with a purpose have achieved that purpose so completely as did «The Man Without a Country» by Edward Everett Hale. Written during the Civil War, it did much to inculcate patriotism at a critical period in the fortunes of the Union. The story centers about Philip Nolan, a lieutenant in the army of the United States, who came under the influence of Aaron Burr, swore his country, and as a punishment was condemned never again to hear its name. To effect this, he is kept prisoner all through his long life, first on one ship, then on another, until at last he dies during the Civil War. Though the idea of life-long imprisonment on shipboard is in itself novel and striking, and the naval setting is worked out with remarkable attention to detail, the chief interest of the story lies in the development of the character of the hero, who, from hating his country, grows through suffering to love her with passionate devotion. All this is told so convincingly, with such a mingling of fact and fancy and with such a wealth of contemporary allusions, that thousands of readers believed it to be an account of fact. The germ of the plot was suggested to the author through the reading of Scott's 'Life of Napoleon.' It occurred to him that if Napoleon had been passed from ship to ship instead of being confined on Saint Helena, England would have been spared much contumely and the French would not have turned Saint Helena into a shrine. The «local color» which adds so much to the story, was gained from reading the records of the navy and the proceedings in the trial of Aaron Burr. Immediately upon its publication in the *Atlantic Monthly* of December 1863, 'The Man Without a Country' became famous, was copied everywhere and was soon translated into foreign languages. It remains one of the most famous of American short stories, and among all the author's voluminous publications is the one most likely to retain its place in literature.

MARION TUCKER.

**MAN-OF-THE-EARTH**, a local name in the Southern States for *Ipomoea pandurata*, the wild sweet potato vine. A hardy perennial, it is sometimes used for clothing stumps, fences, etc. Generally, however, it is a pernicious weed. The name is also applied to the wild cucumber, *Enchymocystis lobata*. See also IPOMOEAE; MORNING GLORY.

**MAN-EATER**, a term applied to any fierce animal which has acquired, or is believed to have acquired, a habit of killing human beings as food. Lions, tigers, leopards and other great cats are accused of it, and undoubtedly many of these beasts, finding how easily a man or woman among East Indian or African villagers may be struck down or seized when sleeping in a flimsy hut, make their lairs near settlements and for a time regularly subsist upon human victims. Such are sometimes, but not always, old cattle-thieves, whose teeth are worn, and which feel unable or unwilling to undertake the exertion of tracking and pulling down wild animals; but this is not always the case. When

such a beast has taken his residence in a district no pains must be spared to kill him, for he will not cease his depredations. Horses, elephants, camels, etc., sometimes become man-eaters in effect, understanding and exercising their power over him for harm.

A man-eater shark is the great white or blue shark (*Carcharodon carcharias*), which is one of the largest and most formidable of fishes. See SHARKS.

**MAN IN THE IRON MASK, The.** See IRON MASK, THE MAN WITH THE

**MAN AND NATURE**, a work of great research written in 1864 by George Perkins Marsh (qv). Its full title was 'Man and Nature, or Physical Geography as Modified by Human Action.' The work became at once a standard with international recognition; a considerably enlarged Italian edition was issued at Florence in 1870; and a second American edition, with further changes, appeared in 1874.

**MAN AND SUPERMAN.** In his subtitle Bernard Shaw announces this work as 'A Comedy and a Philosophy'; he might, with equal pertinence, have added 'A Sermon on the Dangers of Romanticism and a Treatise on Biology, Anthropology and Social Psychology.' It is all these and it is, none the less, a successful play which has been greeted with almost continuous explosions of delighted merriment by theatre audiences on both sides of the Atlantic and has entertained still larger audiences in its printed form. The accepted canons of dramatic criticism break down before the audacious genius of a Bernard Shaw; as his American biographer, Archibald Henderson, says, "He violates all the rules yet turns the trick."

That 'Man and Superman' is a thesis play goes without saying. The difficulty is that there are so many theses, so brilliantly, keenly and yet paradoxically expounded, that one leaves the playhouse, or lays down the book, in a state of high mental exhilaration tempered with an irritating sense of mental confusion. The main theme is, however, easily distinguishable; it is the contention, presented also in several other of Shaw's plays (notably 'The Philanderer,' 'You Never Can Tell' and 'Misalliance'), that in the perennial love chase it is woman, driven by the Life Force, who is the pursuer and man, the quarry. This contention is made to seem more arrestingly unorthodox by associating it with the Don Juan story. In the preface, addressed to the well-known English critic, Mr. A. B. Walkley (who figures in the prologue to 'Fanny's First Play' as 'Trotter'), Shaw says, "You once asked me why I did not write a Don Juan play . . . The day of reckoning has arrived: here is the play!" The modern Don Juan as represented by the hero, John Tanner, is, however, no romantic libertine but a social revolutionist, irreproachable in his private conduct, but implacable in his revolt against false and outworn conventions, determined to save himself from the bondage of love and marriage, but succumbing in the end to the inexorable demands of the Life Force as exemplified by Ann Whitefield. The half dozen other characters are sharply drawn: Octavius, the lover for love's sake; his sister, Violet, who conducts her love affairs on business principles;

Hector Malone, the straightforward young American who sees only black and white; his millionaire father, hard-headed and soft-hearted; Roebuck Ramsden, orthodox Philistine; Mrs. Whitefield, the helpless and bewildered mother, and, best of all, 'Enry Straker, chauffeur and "New Man." The dialogue is Shaw at his best and there are no long monologues as the strictly philosophical discussion of the theme is segregated in the third act of which Shaw himself says—again in the preface—"I have . . . thrust into my perfectly modern three-act play a totally extraneous act in which my hero, enchanted by the air of the Sierra, has a dream in which his Mozartian ancestor appears and philosophizes at great length in a Shavio-Socratic dialogue with the lady, the statue and the devil."

By many critics 'Man and Superman' is regarded as Shaw's most important play since it combines some of his most cherished philosophical and social theories with the elements of popular success. It has been customary to identify Shaw himself with the character and opinions of Tanner, and Granville Barker, who played the part in the original production, was actually made up to resemble Shaw who, however, asserts that he had a certain popular Socialist orator in mind as Tanner's prototype. The play was first produced in May 1905, under the direction of Vedrenne and Barker, at the Court Theatre, London, where so many other Shaw plays have been introduced to the public. Its first American production was in September of the same year at the Hudson Theatre in New York with Robert Lorraine as director and also playing the part of Tanner. In the acting version the Don Juan interlude is always omitted but it has been given separately at the Court Theatre in London. For critical reference see bibliography given in article on CANDIDA; also Dickinson, Thomas H., 'The Contemporary Drama of England.'

**MAN-OF-WAR**, an armed naval vessel regularly employed in the service of a government for war purposes.

**MAN-OF-WAR HAWK**, or **FRIGATE-BIRD**, a tropical web-footed bird (*Fregata aquila*), of the family *Pelecanidae*. The color of the adult bird is shining black, glossed with green, the female being duller in hue. Including the long tail the male bird reaches three feet in length, but the body is extremely small. The bill is longer than the head, strong, hooked at the point and sharp. In proportion to their size their wings are longer than in any other bird and have an extent of seven feet or more. Their flight is so powerful that they are seen more than a thousand miles from shore. They move with great difficulty on land, and rarely alight on the water. Possessing great strength and superior power of wing, the frigate-bird pursues terns or gulls which have secured a fish, and by beating them with wings and beak forces them to drop or disgorge it; then seizes the prey before it reaches the water. It also catches flying-fish for itself. Its usual locality for breeding is the summit of some rocky cliff, but breeds among trees where there are no rocky shores, making a rough platform of sticks. There is only one chalky white egg. This species is found throughout the tropics.

and a second species (*F minor*) ranges about the Indian and South Pacific oceans

**MAN-YOSHU**, man-yō-shoo', or **MANY-OSHIU** (Japanese, COLLECTION OF ONE THOUSAND LEAVES), Japanese anthology, the most ancient in the language. It is believed to have been completed early in the 9th century, it comprises about 4,000 poems which form a valuable index to the history, customs and literary attainments of the time. Among its hundreds of authors the most able are Hitomaro and Akahito. The poems form a record of about 130 years covering the latter part of the 7th and the early part of the 8th centuries.

**MANACLE ROCKS**, England, a dangerous reef on the south coast of Cornwall, not far from Lizard Head and seven and one-half miles from the town of Falmouth. They are barely visible, except at low water, and there is no warning of their presence to the mariner except a bell buoy. Many wrecks have occurred here.

**MANAGER, City.** See **CITY MANAGER, PLAN OF GOVERNMENT.**

**MANAGUA**, mā-na'gwa, Nicaragua, (1) the capital of the state, near the southwest shore of Lake Managua, 32 miles south-southwest of Leon, consists of long rows of huts, and a large square lined with houses of two stories. The centre of the square is occupied by a large church, and there is another large church with a conspicuous white arched portal. The inhabitants, chiefly Indians, are industrious. A railway connects Managua with Corinto on the Pacific. Pop. about 60,000, (2) the lake, about 38 miles long, discharges itself into that of Nicaragua, above which it has an elevation of 16 feet, while its elevation above the Pacific is 156 feet. It has attracted a good deal of attention in connection with a proposed navigable communication between the Atlantic and Pacific.

**MANAKINS**, a rather undefined group of South American tropical birds, mostly of the family *Pipridæ*, related to the North American tyrant-flycatchers. They are small, brightly colored (but the females are usually much plainer than the males), and the wings often bear curiously modified and often highly ornamental feathers. They are of terrestrial habits, staying upon or near the ground in wooded places, clinging to herbs and twigs of bushes like chickadees, and subsisting upon insects largely caught on the wing. Some of the species, called "dansadors" in Brazil, gather in little parties in the breeding season, and go through queer active motions, called dancing. Consult Evans, 'Birds' (1900).

**MANAOAG**, ma-na'wāg, Philippines, a pueblo of the province of Pangasinán, Luzon, situated on the Malabolo River, 18 miles east of Lingayén, an important road centre. Pop. 22,000.

**MANAOS**, mā-nā'oos, Brazil, city and capital of the state of Amazonas, on the Rio Negro, 12 miles above its confluence with the Amazon. A whitewashed cathedral rises in the centre of the town, which also has a custom-house, a small fort and a military barracks and hospital. The city is a steamboat station, and has a considerable trade in various forest products, but principally in india-rubber. Pop. about 87,000.

**MANAR**, ma-nar,' or **MANAAR**, Gulf of, southern India, an ocean inlet between Ceylon and the Madras coast with an extreme width of 150 miles. It is almost closed at Palk Strait on the north by Adam's Bridge, a low reef of rocks and islands. The gulf has celebrated pearl fisheries.

**MANASAROWAR**, ma-na-sa-rō-war', Tibet, a sacred lake and pilgrimage resort north of the main Himalayan range, near Darchan, between the sources of the Brahmaputra and the Indus. It is almost circular in form, about 15 miles in diameter. Another lake in the same locality is the source of the Indus.

**MANASSAS**, ma-nās'as, Va., town and Prince William County seat, alt. 317 feet, on the Southern Railway, 33m., by rail, SW of Washington. It is on state and federal highways, and has an airport, but not airline service. It is a trading center for an agricultural region. It has mayor-council-manager government. Manassas is near the creek called Bull Run. It was twice a battlefield in the Civil War. The courthouse has a collection of war relics. Pop. (1930) 1,215; (1940) 1,302. See **BULL RUN, BATTLE OF.**

**MANASSAS, First and Second Battles of.** See **BULL RUN.**

**MANASSAS GAP, Engagement of.** General Lee, in retreating from Gettysburg, crossed the Potomac at Williamsport, into the Shenandoah Valley, and 15 July 1863 marched to Bunker Hill, and occupied the gaps of the Blue Ridge. On 19 July he ordered Longstreet to march next morning to Culpeper Court House, by way of Front Royal and Chester Gap. General Meade crossed the Potomac at Harper's Ferry and Berlin, on the 17th and 18th, and moved up the Loudoun Valley along the eastern side of the Blue Ridge; and on the 21st Merritt's brigade of Buford's cavalry division, pushing well up into Manassas Gap, skirmished with the 17th Virginia Infantry, and took 20 prisoners, from whom it was ascertained that Lee was moving up the valley with the evident intention of passing to the east of the Blue Ridge. Meade ordered the Third, Fifth and Second corps to march upon Manassas Gap, directing General French, commanding the Third corps, then guarding Ashby's Gap, to hasten to Buford's support. Before dark of the 22d French reached Piedmont, and Birney's division was pushed forward to Buford's aid followed by the remainder of the corps, and at daylight of the 23d entered the Gap and relieved Merritt's cavalry, which moved up to Chester's Gap. Meanwhile, at dawn of the 23d Hood's division of Longstreet's corps had marched from Front Royal and, relieving the 17th Virginia, was deployed in the Gap where it was relieved during the morning by Wright's brigade of about 600 men of R. H. Anderson's division, under orders to hold the Gap until relieved by Ewell, then marching from Winchester. Wright's brigade was deployed at the west end of the Gap, and Rodes' division, with two batteries of artillery, coming to its support, drew up about 600 yards in rear, and sent 250 sharpshooters to take position on its left. These dispositions were completed about 2 P.M. Meanwhile Birney's division had advanced, steadily driving in the Confederate outposts and from Wapping Heights beyond which

was Wright's line. About 4 p.m. Spinola's Excelsior brigade and two regiments of Ward's went forward at a charge and, sweeping past Wapping Heights, engaged Wright's men in a close and severe fight, driving them back upon Rodes, who stood firm, the artillery checking the Union advance about dark, Rodes' line not being engaged, and losing but 15 killed and wounded. Wright's loss was 19 killed, 83 wounded and 66 missing. French's loss was 21 killed and 84 wounded. Ewell fell back to Front Royal during the night. Next morning the Union advance marched to Front Royal, but all of Lee's army had passed and, marching swiftly through Chester and Thornton's gaps, it took position on the south side of the Rappahannock. Consult 'Official Records' (Vol XXVII); Humphreys, 'From Gettysburg to the Rapidan'.

**MANASSEH**, the older but less important of the two sons of Joseph, whose name is derived from the word "to forget," and explained as signifying "he who causes one to forget," that is "all my toil" (Gen. xii, 51). Although in Jacob's blessings, he was made subordinate to his younger brother, Ephraim (Gen. xlviii, 14), he was to be protected by the redeeming angel and to become a great people (Gen. xlviii, 16, 19). As the next verse reads, "in thee shall Israel bless, saying God make thee as Ephraim and Manasseh," the phrase forms the benediction which Jewish parents utter over their sons on the eves of Sabbaths and holidays. The name is held by one of the tribes of Israel, to which was allotted a position in the land of Canaan. It was the sixth in numerical strength (Num. xxvi, 34). During the journey through the desert of Sinai, its station was with Ephraim and Benjamin west of the Tabernacle, and it took a prominent part in the battle and later Israel's strongest chiefs, Gideon and Jephthah, belonged to Manasseh. Its territory was situated on both sides of the Jordan. With the centuries, the tribe fell behind Ephraim in power and prominence, and like Reuben and Gad it carried assimilation so far that it lost its identity, as it practised the idolatries of the people among whom it lived.

**MANASSEH**, king of Judah, Hezekiah's successor, boy of 12 on his father's death (2 Kings xxi, 1), and reigning 53 years. In the inscriptions of Assyria, he is mentioned as a vassal king during the reigns of Esarhaddon and Assurbanipal, who were aggressive monarchs, plundered Egypt and Phœnicia as well. Further light is thrown on the calamitous rule of Manasseh by the statement (2 Chron. xxxiii, 11) that the Assyrian captains took him in chains to Babylon, as punishment for Judah's disloyalty to God. On his repentance, however, he regained his throne and showed a genuine religious spirit which gave a new character to his nation. Ezekiel in a memorable chapter (viii) describes the spread of religion during Manasseh's reign and how the popular worship was a shameless blend of foreign idolatries, the influence of which was not quickly overcome, and against which the prophets declaimed at the peril of their lives. A prayer in Greek attributed to Manasseh, when captive in Babylon, is found in the Apocrypha, but never recognized as canonical by the Church. Jewish tradition makes no reference

to it. Late critics claim that the prayer was originally in Hebrew.

**MANASSEH**, son of Johanan, the high priest and brother of Jaddua, and who married Sanballat's daughter. In Nehemiah (xii, 28) he is referred to without name, and he is further declared as having been deposed from the priesthood on account of being Sanballat's son-in-law. In Josephus (Antiq. xi, 8, 2-4), a fuller account is given. Incensed at Manasseh's marriage with a foreign woman, his brother Jaddua, the high priest, placed before him the alternative of divorcing his wife or giving up the priesthood. When he went to Sanballat and frankly declared his preference for the priesthood, despite his love for his wife, his father-in-law assured him if he would retain his wife that the king would give him the rank of high priest. Sanballat added that when he built with the king's approval a temple on Mount Gerizim, Manasseh should be its high priest. Hence he remained with his father-in-law, and became high priest in the Samaritan temple on Gerizim. A conflicting passage in Josephus (Antiq. xiii, 4, 1) mentions Manasseh as high priest at Jerusalem between the priesthood of his nephew Elcazar and that of Onias II.

**MANASSEH BEN ISRAEL**, Hebrew scholar: b. La Rochelle, 1604; d. Middleburg, Netherlands, 26 Nov. 1657. His parents had resided at Lisbon but persecution rendered it prudent for them to remove to the north, and after a comparatively brief sojourn at La Rochelle, the family settled in Amsterdam, where the subject of this sketch was educated. In 1620 he became rabbi of the congregation Neveh Shalom of Amsterdam, and soon became a noted preacher. He started the first Hebrew press in Holland in 1627, published a prayer-book, a Hebrew grammar and an edition of the Mishnah. In 1632 appeared the first volume of his great work, 'El Conclador,' a commentary and discussion of the discordant passages of the Old Testament. This work, written in Spanish, brought Manasseh great fame among the learned of his time and he maintained a correspondence with Grotius, Bartaeus and others. He sought the readmission of Jews to England but although favored by Cromwell his project did not receive the approval of Parliament. Other works from his pen are 'Hope of Israel' (1650); 'Pedro Glorioso' (1655); 'Vindiciæ Judæorum' (London 1656); 'De la fragilidad humana'; 'Thesoro dos Dinim,' etc.

**MANATEE**, an aquatic mammal or "sea-cow" of the order *Sirenia* (q.v., for general structure), several species of which inhabit the fresh waters along the eastern coasts of tropical America and of western Africa. The body is somewhat seal-like in shape, reaches a length of 8 or 10 feet, has a large round head with bristly, tumid lips, no apparent neck, no external ears, the forelimbs converted into paddles, no hind limbs, and the tail spade-shaped, like that of a beaver. The thick wrinkled skin is blackish, and almost hairless, but a coat of short, seal-like fur clothes the foetus, indicating descent from furry ancestors. Structurally the manatee differs from other sirenians in having only six cervical vertebræ, and in the large number of molar teeth, which apparently go on increasing indefinitely during the animal's life,—the suggestion being, as Beddard points out, that



they are worn away by the attrition resulting from so much sand being mixed with the daily food. The cleft lip to be mentioned hereafter is also a generic peculiarity. The manatees are stupid, gentle, defenseless and harmless creatures, showing great affection for their young, one or two in number, which are nursed at pectoral udders, often while the mother stands erect upon her tail enfolding the "calves" with her broad arms. They never come ashore, but secrete themselves amid aquatic vegetation, where the only enemies they need fear are the larger alligators and the jaguar. Their food consists of fresh-water weeds and their roots, and these are procured by means of the curious form of the upper lip: "this is split in two, and the two halves, which are furnished with strong bristles, can play upon each other like the points of a pair of forceps." This cleft-lip is only suggested in the case of the dugong, but the fetus of that animal shows the structure plainly, indicating that the manatee is the more primitive form of the two. The flesh is excellent for food. The American manatees have been nearly exterminated. They formerly abounded in the Indian River and other marshy waters about southern Florida, but by the end of the 19th century had been reduced to a small, carefully protected band near Biscayne Bay in the Miami River. They still survive in small numbers along the coast of the Caribbean Sea and about the mouths of the Orinoco. The Florida manatee is called by American zoologists *Manatus latirostris*, and is regarded as different from those of Central and South America, long known as *M. americanus*. The African species is *M. senegalensis*. Consult Beddard, 'Mammals' (New York 1901).

**MANATEE**, Fla., town in Manatee County; adjacent to Bradenton; on Atlantic Coast Line and Seaboard railroads. It has fruit and vegetable packing plants. Pop. (1940) 3,595.

**MANAYUNK**, măn-a-yŭnk'. See PHILADELPHIA.

**MANBY**, George William, English inventor: b. Denver, Norfolk, 28 Nov. 1765; d. Southtown, Great Yarmouth, 18 Nov. 1854. He was educated at the military college of Woolwich, and became in 1803 barrack master at Great Yarmouth. His attention having been drawn to calamities resulting in cases of shipwreck, from the difficulty of establishing communication with the shore, he attempted casting a rope from the shore to the wreck by the agency of gunpowder. Chains were unable to stand the shock of the discharge, but stout strips of rawhide closely platted together were found to answer, and on 12 Feb. 1808 the entire crew of the brig *Elizabeth*, wrecked within 150 yards of the beach, were rescued by the simple contrivance of Captain Manby. In 1810 his invention was brought before a committee of the House of Commons, and having been favorably reported on, he received a grant of money, and all the dangerous stations on the British coasts were supplied with his apparatus. He also contrived shells filled with luminous matter, to enable the crew to perceive the approach of the rope, in the manufacture of which he suggested several improvements.

**MANCHESTER**, Conn., town in Hartford County; alt. 140 feet; on the New York, New

Haven and Hartford Railroad; 8m. E. of Hartford. The township (which includes South Manchester) is situated in a fertile area growing fruits, vegetables, tobacco and nursery products. The Cheney silk mills, established here in 1838, form the town's chief industry. Other manufactures include woolens (made here before 1790), soap, paper and fiber board, parachutes, electrical instruments, needles, clothing, baseballs, toys, leather novelties, machinery and tools, and chimes. Manchester has the Whiton Memorial Library, and South Manchester, the Mary Cheney Library. There is a state trade school here. Settled in 1672, it was a part of Hartford, and then of East Hartford, until its incorporation in 1823. Town government is operated under a special legislative charter. Pop. (1940) 23,799.

**MANCHESTER**, England, an episcopal and university city, inland port and Parliamentary and county borough of Lancashire, 188 miles north of London and 31 miles east of Liverpool, on the Irwell, an affluent of the Mersey, since 1894 connected with the sea at Eastham, on the Mersey, by the Manchester Ship Canal, 35½ miles long. It is one of the principal manufacturing cities of the world and the cotton trade centre of Great Britain. It covers over 21,645 acres. Railways and electric street tramways communicate with the surrounding towns and villages of the most populous industrial region of England.

**Geology.**—Manchester is built on a large plain, within easy distance of breezy hills and moorland, which are clearly visible from the outskirts of the city. The surface of the ground is composed of thick deposits of glacial drift—boulder clay, sands and gravels—beneath which are Triassic, Permian and Carboniferous rocks. Rich coal-fields are found in the neighboring parts, some of which extend under a portion of the city.

**Industries and Finances.**—Though Manchester is the chief seat of the cotton trade, it is no longer that of its manufacture, much of that industry being carried on in towns and villages beyond its borders. A considerable number, however, remain of cotton mills, print works, dyeing and bleaching concerns and factories concerned with other branches of textile manufacture. Engineering and machinery works are exceedingly numerous, as are the manufactories of electrical appliances. It is calculated that there are about 700 different industries carried on here, some of the chief among them, apart from those named above, being chemical, india rubber, paper and glass works. The membership of the Royal Exchange is over 7,000 and the Grocery Exchange about 3,000. There are also stock, corn, provision, coal and cotton-waste exchanges. The vegetable and fruit market serves for the whole of South Lancashire and part of Cheshire, while the fish market is second only to Billingsgate. There are nearly a score of banks, with numerous branches. The business of the post office exceeds that of any other out of London.

**Bridges and Railway Terminals.**—The bridges are of no engineering importance, as the Irwell is here but a narrow river. The terminal railway stations are four in number. (1) London Road, 1842, rebuilt 1881; (2) Victoria, 1844, serving London, Midland and Scot-

ish Railway; (3) Central, built 1877, near which the Midland Railway Company have erected a great hotel; (4) Exchange, 1884 contiguous to the Victoria station and serving the L. M. S. and G. W. The oldest railway station in the world is still to be seen in Liverpool Road, though not used for its original purpose. It was opened in 1830.

**Buildings.**—The principal public building is the town-hall, commenced in 1868 and completed in 1877, at a cost, including land, of upwards of a million pounds. It covers an area of 8,648 square yards. The clock-tower is 286 feet high and contains a peal of 21 bells. In the great hall is a series of frescoes by Ford Madox Brown, illustrating incidents in the history of Manchester. The old town-hall, erected in 1825, is now occupied as a Free Reference Library. It is a classical building, and another of the same style and period is the City Art Gallery, formerly known as the Royal Institution. The Royal Infirmary, which originated in 1752, is situated in one of the finest positions in the centre of the community, but has been removed to an exclusive new building on a site on the outskirts. The Free Trade Hall (1856), built in the Italian style, will hold 5,000 people and has been the scene of many great political meetings and of the renowned concerts conducted by Sir Charles Hallé and Dr. Hans Richter. In a similar style is the Royal Exchange (1868-74), one of the most spacious erections of its kind. The area of the great hall is 5,170 square yards. The Assize Courts by Alfred Waterhouse, the architect of the town-hall, were built in 1864, at a cost of £100,000. Immediately to their rear is the county jail. The university buildings are also by Waterhouse. The John Rylands Library, by Basil Champneys, is perhaps the chief architectural gem of the city. Other examples of street architecture worthy of attention are the City Police Courts, the Corn Exchange, the Inland Revenue Offices, the Post Office, the Fire Brigade Station, Reform and Conservative clubs, and many of the banks, insurance offices and warehouses. The Municipal School of Technology is one of the most striking examples anywhere of a well-equipped school in an imposing building.

**Educational Institutions.**—Manchester University (qv) was reconstructed as an independent corporation in 1903. It was originally founded as the Victoria University in 1880, with a federation of the Owens College, Manchester, and the University College, Liverpool, as its colleges, to which the Yorkshire College at Leeds was afterward added; but in 1903 a separate university charter was granted to each city. The Owens College, which has now been incorporated with the university, was founded in 1850 by the aid of nearly £100,000 left by Mr John Owens. It began work in a large house formerly occupied by Richard Cobden and was removed to the present fine buildings in 1873. Since then the Museum, Christie Library, medical school, physiological and other laboratories and the Whitworth Hall have been added and the institution has benefited from many large gifts and bequests. The splendid Municipal School of Technology is affiliated to the university, and the subjects in the faculty of technology are taken there. The faculty of theology was instituted in 1904, and the co-

operation of the various theological colleges was obtained. These include Baptist, Free Methodist, Independent, Primitive Methodist, Roman Catholic, Unitarian and Wesleyan colleges. The oldest educational institution in the city is the Grammar School, founded by Bishop Hugh Oldham in 1515. It has now 1,070 scholars. Many distinguished names appear in the records of its alumni. Chetham's Hospital is named below. The following may be added: The Girls' High School, the Hulme Grammar School (founded by the Hulme trustees), the Nicholls Hospital, Warehousemen and Clerks' School and the Royal Manchester College of Music, founded in 1893, as well as the numerous elementary and other schools.

**Libraries.**—Of libraries, the most recent, the John Rylands Library, is the most widely known, on account of its marvelous collection of rare and costly books and manuscripts. Its 250,000 volumes embrace the Althorp Library, purchased from Earl Spencer, and Lord Crawford's collection of manuscripts. It was founded and endowed by Mrs Rylands in memory of her husband and was opened in 1899. The Chetham Library dates from 1656, from which time it has been open free to all, and is part of the foundation of Humphrey Chetham, the other part being a hospital or school for poor children. The Public Free libraries were established in 1852 and are supported by a public rate, which now yields over £35,000 a year. The chief or reference library contains over 200,000 volumes and the 24 branch or lending libraries some 300,000 volumes. The Christie Library at the university was built by the late Mr. R. C. Christie, and on its shelves are the entire libraries of Mr Christie, of Bishop Prince Lee, Prof. E. A. Freeman, in addition to other special and general collections. The Medical and Law libraries belong to the members of those professions, and there are other public and semi-public libraries of importance.

**Art Galleries.**—The City Art Gallery has been maintained by the corporation since 1882 and contains many fine examples of the British school, particularly works of Millais, Leighton, Holman Hunt, G. F. Watts and other modern artists. In this gallery, which formerly belonged to the Royal Institution, annual exhibitions have been held since 1827. The Manchester Academy of Fine Arts also holds its exhibitions here. Attached to the Municipal School of Art is a well-arranged art museum, and in the Whitworth Institute galleries in Whitworth Park will be found a rich collection of pictures, including a nearly complete series of specimens of the best English water colors, from those of Sandby, Girtin and Turner onward. The institute is one of many benefactions enjoyed by Manchester from money left by Sir Joseph Whitworth.

**Churches.**—When the diocese of Manchester was founded in 1847 the Collegiate Church became the cathedral. It is of unknown origin, but the present perpendicular Gothic building was raised, on an earlier foundation, about 1422. A large part has been rebuilt, mainly on the old lines, in recent years, yet many interesting portions of the earlier building remain. The ancient stalls in their choir have exquisitely carved canopies. The ancient parish consisted of 29 townships, including Salford, and some of them had chapels

of their own. In 1850 the ancient parish was divided into independent parishes by Act of Parliament. Next to the cathedral the oldest church is Saint Ann's (1712), which contains some beautiful windows by F. G. Shields. Many of the 19th century churches are of considerable pretensions. Besides 91 belonging to the Church of England there are 28 Roman Catholic churches and many others belonging to various sects. The Jews have 11 synagogues, and there is a Greek and an Armenian church.

**Hospitals.**—Hospitals to the number of over 20, all maintained by voluntary subscription, are provided for the treatment of nearly every complaint to which the human frame is liable. The Royal Infirmary is the chief one. Saint Mary's Hospital and the Eye Hospital are others of large dimensions, while to the Hospital for Consumption is attached a sanatorium at Delamere in Cheshire, which was provided at a cost of £70,000 by a local benefactor (W. J. Crossley). In addition there are several dispensaries and asylums, and a large number of charitable institutions of various kinds.

**Societies.**—The literary and scientific societies are many in number and of high standing. The Chetham Society and the Record Society devote themselves to the publication of historical records of Lancashire and Cheshire. The Antiquarian Society (1883) has similar objects. The Literary and Philosophical Society was founded in 1781, the Literary Club in 1862, the Statistical Society in 1833, the Geological Society in 1839, the Geographical Society in 1884. These, as well as the Microscopical, and some other societies, all publish their transactions. Musical societies are numerous and vigorous, and the artists, architects, lawyers, doctors, accountants and men of other callings have their own societies.

**Public Works, Parks, Etc.**—The corporation is the owner of the waterworks that supply Manchester and Salford and some surrounding towns and villages. The water comes from Longdendale on the borders of Derbyshire and Thirlmere in Cumberland, and the works have cost over £8,000,000. The average quantity of water supplied per day is 38,000,000 gallons. The gas works have been the property of the corporation since the incorporation of the borough, and have always yielded a profit in aid of the rates. The supply of electricity is also a municipal undertaking. So also the fire brigade, public abattoirs, the foreign animal wharf on the Ship Canal, cold-air stores and the extensive sanitary works. The markets and the electric tramways are under municipal ownership. The city has many public parks, open spaces and playgrounds. The area of the largest (Heaton Park) is 662 acres and its cost was £220,000. The other municipal works include baths, cemeteries, workmen's dwellings, infectious diseases hospitals, libraries, art galleries, technical school and school of arts. The council is also the local education authority for the city. The construction of the Ship Canal involved an outlay of over £17,000,000, one-third of which was lent by the corporation, who appoint 11 out of the 21 directors of the Ship Canal Company.

**Government.**—Since 1838 Manchester has been governed under the Municipal Corporations Acts and a long series of local statutes. The council consists of 144 members, 35 of

whom are aldermen. The head of the council is styled lord mayor, that title being conferred in 1893. The administration of the Poor Law is entrusted to three boards of guardians, for the Central and the North and South townships, and there are separate workhouses and other necessary establishments. There is a court of record for the trial of civil actions, established in 1838 and reconstituted in 1858, and now amalgamated with the court of record of the hundred of Salford, and since 1839 there has been a separate commission of the peace and separate quarter sessions. The Assize, County, Chancery and other law courts held in the city are not under local control.

**History.**—Manchester was in prehistoric times occupied by the Britons, as proved by urns and implements that have been unearthed, and abundant Roman relics bear evidence to a long period of Roman occupation. Little is known of the rule of the English or Saxons, but among other traditions is that of Queen Ethelbega, wife of Ina, king of Wessex, having lived here in 689, and of the Danes sacking the town in 863. In 923 King Edward the Elder, son of Alfred the Great, rebuilt and fortified Manchester. Manchester is mentioned in the Domesday Book, 1086, as possessing two churches, one of which is now conjectured to have been at Ashton-under-Lyne, originally in the parish. The barony of Manchester was held by the Gresleys, 1086 to 1313, and the last of that family granted a charter to his burgesses in 1301, and it was by this charter that the town was governed for over five centuries. The manor was afterward held by the De la Warres and the Wests until 1579, when it was sold to John Lacye, a London mercer, for £3,000, who in turn disposed of it in 1596 for a profit of £500 to Sir Nicholas Mosley, a Manchester man, who had become a prosperous London merchant, destined to fill the office of lord mayor three years after his purchase of the manor. In his family the manor remained until 1845, when the whole of the manorial rights were purchased by the corporation for £200,000. One of the lords of Manchester, Thomas la Warre, entered the priesthood, became rector of the parish and in 1421 provided the means for collegiate the church, and gave his manor-house as a residence for the clergy of the college. This house, now known as Chetham's Hospital, is, apart from the church, almost the sole architectural relic of feudal Manchester. After the Reformation the building was confiscated by the Crown, and in the reign of Edward VI passed by purchase to the Earl of Derby. In his family it remained until the Commonwealth, when it was sequestered by the Parliament, with other possessions of the royalist Earl of Derby. In 1656 it was purchased by the executors of Humphrey Chetham and turned to its present uses. Manchester was visited in 1495 by Henry VII. It is unknown when the town began to be established as a trading and manufacturing centre, but it is clear from the Act of 1541 that a considerable commercial position had by that time been attained. Manchester holds an important position in the earlier history of the civil wars. At the outset the townsmen took the side of the Parliament, and made an effort to avert the conflict by presenting a petition to King Charles. The town was besieged by Lord Strange, who was repulsed. Prior to the actual

siege he demanded the delivery of the magazine, and in an affray which ensued a man was killed. This was on 15 July 1642, and the fatality was one of the first that occurred in the wars. The town was represented in Cromwell's first and second parliaments. In 1715 there were many Jacobites among the influential townsmen, and in the rising of 1745 the Young Pretender found numerous adherents here. Some of them, on the failure of the rebellion, were executed for their treason. The Duke of Bridgewater opened his canal from Worsley to Manchester in 1761, and the extension to Runcorn was completed in 1795. Distress, caused by the wars and high taxation, was a main cause of the political discontents which marked the first two decades of the 19th century, and are remembered by a weavers' riot in 1808, the «blanketeers» meetings in 1817 and the disastrous Peterloo affair of 1819, when, at a meeting to petition Parliament for the redress of grievances, several people were killed and many more injured during a charge of the military, after the reading of the Riot Act. The Manchester and Liverpool Railway was opened in 1830, marking a new era in internal communication. Manchester was enfranchised by the Reform Act of 1832, getting two members. (Under the redistribution of 1917, members are allocated to the city). The Anti-Corn Law League was established in 1839, and prosecuted a vigorous campaign throughout the country, culminating in the repeal of the Corn Laws in 1846. In 1847 the bishopric of Manchester was created and the collegiate church converted into a cathedral. Queen Victoria paid three visits to Manchester, the first in 1851, the second in 1857 and the last in 1894, when she opened the Ship Canal. The great Art Treasures Exhibition was held in 1857 and the Jubilee Exhibition in 1887. Both were remarkably successful, the latter yielding a profit of £43,300, which was devoted to public uses. From 1862 to 1865 there was great distress throughout the cotton manufacturing districts, owing to the American War; a relief fund of over \$1,000,000 of money was raised on behalf of the operatives. The Ship Canal was projected in 1882 and opened in 1894. In March 1902 the city was visited by the Prince and Princess of Wales. In July 1905 King Edward VII opened a new dock at the Ship Canal. The city suffered severely from German bombing raids in 1940-41.

**Population.**—The population of Manchester is about 756,000. In 1841 it was 242,983; in 1871, 351,189; in 1891, 505,368; in 1931, 766,378. The great increase is partially accounted for by the extensions of the city boundaries which have taken place since 1885.

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**MANCHESTER**, Iowa, city and Delaware County seat, alt. 919 feet, on the Maquoketa River and on the Illinois Central and the Manchester and Oneida railroads (the latter electric), 130m. NE. of Des Moines, also on state and federal highways. Situated in an agricultural region, the city is a dairying center and a trading point for the farmers of the county. There is a public library here. Settled in 1850, as the town developed it was first known as Burrington; the present name was adopted in 1856. Incorporation as a city was effected in 1886. Manchester has a mayor and council, and a city manager. Pop (1930) 3,413; (1940) 3,762.

**MANCHESTER**, Mass., town in Essex County, alt. 14 feet; on Massachusetts Bay; 6m. SW. of Gloucester, on the Boston and Maine Railroad. Originally a fishing village, it began to develop into a summer resort about 1850. Settled about 1626, the place was known as Jeffrey's Creek until 1645, when the name was changed and the town was incorporated. There is a library, and the historical society has quarters in an old home. A brick building in which ammunition was stored during the War of 1812 stands on Powder House Hill. Pop (1930) 2,636, (1940) 2,472. Consult Lamson, 'History of the Town of Manchester.'

**MANCHESTER**, N. H., the principal city of the State, one of the county-seats of Hillsboro County, on the Merrimac River at the mouth of the Piscataquog, 18 miles south by east of Concord, and on the Boston and Maine Railroad. The first settlement was made in 1722 and for a number of years it was called Amoskeag and Tyngstown. In 1751 it was incorporated as Derryfield and in 1810 the name was changed to Manchester. It was chartered as a city in 1846. The Amoskeag Falls (55 feet) in the Merrimac, above the city, provides extensive water-power which, by means of canals, is made available for manufacturing. Cotton goods manufactures and woolen goods manufactures are the city's largest industries and for many years the mills of the Amoskeag Manufacturing Company were considered the largest cotton manufacturing plant in the world. Competitive conditions made the enterprise unprofitable after the depression of 1929 and the plant was closed. Local business men, determined to save for the city this valuable industry, bought the plant and leased parts of it to scores of small manufacturing enterprises which have since operated successfully. The Amoskeag plant at the height of its prosperity operated over 660,000 spindles and 24,000 looms and consumed 55,000,000 pounds of cotton yearly. The mills have been operated for more than a century, having been founded in 1810. There are numerous other important industries in the city, especially the shoe industry. The city covers an area of about 35 sq. mi., is well laid out and its residential districts present an attractive appearance. It is the seat of a Roman Catholic bishop since

1884 Near by are two notable Catholic schools, Mount Saint Mary, at Hooksett; and Saint Anselm's College, at Goffstown. The Carpenter Memorial Library is one of the finest structures of its kind in New England, and other outstanding buildings are those of the Currier Gallery of Art; the Institute of Arts and Sciences, the Association Canado-Américaine; and the Manchester Historic Association. City Hall, built from red brick of local manufacture, dates from 1845. Manchester was the home of Gen. John Stark (q.v.), hero of the French and Indian, and the Revolutionary wars. Stark Park, in which the general is buried, is one of the most beautiful in the vicinity, overlooking the Merrimac River and the Uncanoonuc Mountains, the Stark home is owned by the Daughters of the Revolution, and the site of the old Stark family homestead forms a part of the grounds of the State Industrial Home. Other points of interest are Rock Rimmon, with its story of an Indian maiden's love tragedy; Mast Road, on the Piscataquog River, named because of the giant pines reserved for the British navy having been transported over it; Goffs Falls, near which was the homestead of the Goffe family, first white settlers in the district, and the Blodgett Canal, completed in 1807, once important as the last link of an inland waterway from Boston to Concord. Manchester has many fine summer homes, a considerable summer resort business, and a municipal airport. Pop. (1940) 77,685.

**MANCHESTER, Va.**, former city in Chesterfield County, on the James River, opposite Richmond, to which it was annexed in 1910.

**MANCHESTER, Vt.**, town and one of the two Bennington County seats, alt. 694 feet, on the Rutland Railroad, 32 miles southwest of Rutland. It is also on state and federal highways, and is in a farming section. There are marble quarries near by. It makes fishing rods and flies, and clothespins. The town government body is a board of selectmen. The Mark Skinner Library is a memorial to one of the early families. Manchester played a prominent part in the formative period of the state's history, when New York and New Hampshire struggled for control. The New Hampshire Grants, after the French and Indian wars, included the grant of Manchester township in 1761. Manchester was a center of Vermont activities in the Revolutionary War. It was a junction point of stage coach traffic. Manchester is the seat of Burr and Burton Seminary, founded in 1829. A Southern Vermont artists' exhibition is held annually in the Seminary gymnasium. The town has a number of old colonial buildings, and fine modern summer homes. The sidewalks are made of marble slabs. On the green is a soldiers' monument, with a statue of a Continental soldier. The place was named after Manchester, England. Pop. (1940) 2,139.

**MANCHESTER CANAL**, England, a great ship canal, by which Manchester (q.v.), an inland town, was virtually converted into a seaport. See **SHIP CANALS**.

**MANCHESTER UNIVERSITY**, England, known officially as Victoria University of Manchester. In 1846 a Manchester merchant, John Owens, left £96,000 for the foundation of a college for boys of 14 years and older, from Manchester and vicinity. Owens College opened

on March 12, 1851, with five professors, and in the fall term there was an enrollment of 62 students. (Women students were first admitted in 1883.) A charter was granted in 1880 for the federal Victoria University, with constituent colleges at Manchester, Leeds, and Liverpool. The arrangement was short lived; by 1904 they were separate, and Owens College was incorporated into Victoria University of Manchester. The constitution of 1903 provided for a chancellor, vice-chancellor, court of governors, council, and boards of faculty and students. There are nine faculties: arts, science, law, medicine, music, economic and social studies, theology, technology, and education. Manchester Museum is affiliated with the university and was established for the promotion of natural science. In 1945-1946 there was a faculty of 350, with 3,444 students, and a library of 323,844 volumes.

**MANCHURIA**, a region comprising the extreme northeastern portion of China, known to the Chinese as **TUNGPEI**, meaning the Northeast; called **MANCHUKUO** during the Japanese domination. The territory lies mainly between latitudes 40° and 53° N. and longitudes 118° and 135° E. It is separated from Asiatic USSR on the north and northeast by the Amur River, on the east by the Ussuri, and on the northwest by the Argun. On the west it is bounded by the Mongolian People's Republic and China Proper; on the south by Korea and the Yellow Sea. The estimated area is 431,558 square miles. The estimated population (1945-1946) was 37,783,252. Its leading cities are Changchun (Hsinking; 1936 pop. 246,664), Mukden (Shenyang; 1947 pop. 530,173); Harbin (Pinkiang; pop. 278,083); and Dairen (Talien; pop. 184,954). Before the Japanese seized Manchuria in 1931, it was divided into three provinces—Liaoning (Fengtien), Kirin, and Heilungkiang. After Chinese recovery of the northeast in 1945, it was divided into nine provinces. Liaoning, Antung, Liaopei, Kirin, Sungkiang, Hokiang, Heilungkiang, Nunkiang, and Hsingan (qq.v.). The former Kwantung Leased Territory, including Dairen and Port Arthur, lies on the tip of the Liaotung Peninsula which is in Liaoning Province.

**The Land.**—Vast chains of mountains ramify over the northeast, with the Khingan Mountains in the north and the Changpai Range in the south. The principal rivers are: the Amur; the Argun; the Sungari, the vast basin of which occupies the rich central part of the territory; the Ussuri, a tributary of the Amur; the Yalu and the Tumen, which separate Manchuria from Korea; and the Liao, which flows through the rich southern Manchurian delta into the Gulf of Liaotung. The climate is in most parts healthful and invigorating. In the north and more elevated parts, the cold of winter is intense, the thermometer sometimes falling to 48° below zero, and the snow lying for six months in the year. The summer temperature reaches about 90° in the shade.

**The People.**—South Manchuria was historically populated by Chinese. North and east Manchuria were occupied by tribes known historically as Suchen, Khitan, Juchen and Tungus. West Manchuria was partly occupied by Mongols. The Juchens were also known as Manchu who established the Manchu dynasty from 1644-1911. Present day Manchuria, however, is mainly Chi-



nese. The great majority of Manchus have adopted Chinese names, customs and language. The Manchurian language, which became a dead language even before the end of the Manchu dynasty in 1911, was created in the 17th century patterned after the Mongolian language. The language is written from top to bottom and from left to right.

**Natural Resources and Production.**—The soil in the northeast is exceedingly fertile, especially in the valleys of the Liao and Sungari rivers. It is China's breadbasket; soybean, wheat, millet, sugar beets, rice, peanuts, and many other crops grow in abundance. It also produces cotton, tobacco, and a great deal of wool, while its silk industry is promising. The vast forests of the country are rich in useful timber of all kinds, such as walnut and oak, together with the soft pine and fir. They abound in wild animals: the tiger, panther, bear, fox, wolf, and stag, as well as the eagle and other birds of prey. The rivers abound with fish. But what makes the region particularly valuable to China is its underground wealth. Manchuria has 80 per cent of China's iron deposits, and some of her best coal deposits, including one of the largest open-pit coal mines in the world. No large-scale oil reserves have been found in the northeast, but its rich deposits of oil-bearing shale supply crude oil while its rich coal reserves offer a bright future for the gasoline-extracting industry. As for other minerals, the aluminum and magnesium reserves are very large. There are also important reserves of tungsten, tin, gold, silver, zinc, copper, asbestos, molybdenum, limestone, marble, and other minerals. The territory has a huge salt production to substantiate a vast chemical industry.

There is a good network of railways in Manchuria, with a total mileage (1947) of 8,000 miles. With its fine harbors, the area is capable of a high degree of industrialization.

**Finance.**—In the years under Japanese domination, Manchuria belonged to the Japanese yen block and a paper currency known as the Manchukuo yen was in circulation. After the Soviet declaration of war on Japan on Aug. 9, 1945, the Soviet troops occupying Manchuria issued an undetermined amount of special Soviet military notes for circulation in Manchuria. These notes were later redeemed by the Chinese government. The present (1947) currency in circulation is known as the northeast currency note, each dollar of which is equivalent to 12.50 Chinese National currency dollars. Because of its past high production and sounder financial foundation, inflation in Manchuria is not so severe as it is in China Proper. Consequently its currency is in a more advantageous position than the Chinese National currency.

**Government.**—After the Chinese recovery of Manchuria, it was divided into nine provinces and nine provincial governments were established to handle all civil administration in the territory under the direction of the President's Headquarters in the northeast established in Changchun. A Northeast Economic Council was established to direct and coordinate all economic activities in the area. A Northeast Peace Preservation Headquarters was established to direct all military activities. The provincial governments have different departments in charge of civil administration, finance, education, reconstruction, and other duties. Under the provincial governments are county governments administering

county affairs. Provincial political assemblies serve as provincial representative bodies in their respective provinces. Many of the provincial governments however, are unable to function as their territories are under Communist control. The Communists have their own administrative organs in their areas.

**Way of Living.**—As Manchuria is now predominantly Chinese, the way of living of people there is not different from north China Chinese. Both men and women dress in long gowns. In winter, most women dress in long trousers to protect them from the severe weather. Their staple food is wheat flour and *kaoliang*. Their religions, like that of north China Chinese, include Buddhism, Confucianism, Islam, Taoism, and Christianity. There is complete freedom of religion in Manchuria as in other parts of China.

**Education.**—The education system in the northeast is the same as other parts of China. Theoretically, children are required to go to school when six years of age. They have six years of primary school education. The middle schools are divided into junior and senior middle schools each of three years. The colleges and universities are four-year institutions. There are also normal schools and professional schools for students who want to go into training for teaching or other professions after finishing primary schools. Because of the inadequate number of schools, there is a high rate of illiteracy in Manchuria, especially among the adults.

**History.**—Manchuria came within the horizon of the Chinese Empire in the 3d century B.C. and the Liao River valley was already then populated by Chinese settlers. Manchuria began to play an important part in Chinese history when the Khitans founded the Liao dynasty in the 10th to 12th centuries and when the Juchens founded the Gold dynasty in the 12th and 13th centuries. Both dynasties, however, limited themselves to Manchuria and north China. It was when the Juchens founded their Ching (Manchu) dynasty in the 17th century that they conquered other parts of China. The founder of the Manchu dynasty was Nurhachi who began his career of empire building in the area around the middle Sungari, near present Changchun. He rose from very small beginnings but was soon able to conquer other clans and tribes, and create a big warlike state outside of the Great Wall, laying the ground for further invasion of China Proper by his successors in early 17th century. Finally, his successors were able to overrun entire China and established the Manchu dynasty in 1644. Thereafter they made Manchuria a crown reserve territory and Chinese immigration, which had been in progress for centuries, was forbidden. But in practice, Chinese immigrants were able to move into Manchuria in increasing numbers during the Manchu dynasty which eventually allowed this movement in the later 18th century.

For a considerable time prior to 1891, when the first sod was turned for the construction of the Trans-Siberian Railway, the Russian government was anxious to secure control of Manchuria. Japan, meanwhile, was casting covetous eyes upon the mainland of Asia, and especially upon the northeast. When China was defeated in the first Sino-Japanese War in 1894-1895, Japan secured from China through the Treaty of Shimonoseki (April 17, 1895), among other things, the cession of Formosa (Taiwan), Pesca-

dores Islands, and the Liaotung Peninsula on which tip lie Dairen and Port Arthur in southern Manchuria. Six days after the signing of the treaty, the Japanese government received notes from the governments of Russia, Germany, and France "recommending" that Japan restore to China this peninsula. Japan, weak though victorious, accepted this "recommendation" and surrendered her claim to the peninsula in return for an increased indemnity from China.

Immediately after this, Russia began to push her way into Manchuria. In 1896, a Russian financial interest secured the privilege of building the Chinese Eastern Railway, which is a spur of the Trans-Siberian Railway and a shortcut to Vladivostok. Another line extended from Harbin to Port Arthur (Ryojun). In 1898, Russia demanded and obtained a lease of the Liaotung Peninsula from China for 25 years, and the right to develop Port Arthur as a naval base.

The Russians occupied the northeast during the Boxer Rebellion of 1900, although no actual fighting took place in that area. After the conclusion of the treaty of 1901, the Russians refused to withdraw their troops from the northeast until they secured further concessions from China which gave them a "railway zone" along the railways and other special economic interests in the region. In the next few years, through arrangements with other powers and secret treaties concluded with China, Russia established her sphere of influence in the northeast.

The Russo-Japanese War in 1904-1905, which was fought on Chinese territory and without any respect for China's territory rights as a neutral, saw Russia's defeat. The resulting Treaty of Portsmouth (Sept. 5, 1905) gave Japan, among other things, the "right of succession" to the Changchun-Port Arthur section, later known as the South Manchurian Railway, of the Chinese Eastern Railway, and the lease of the Liaotung Peninsula. The treaty also provided that the warring parties agreed to withdraw their troops from Manchuria with the exception of the Liaotung Peninsula, but reserved to themselves the right to maintain railway guards along their respective railway lines. (See PORTSMOUTH, TREATY OF.) The provisions of the Treaty of Portsmouth concerning China were substantiated by the Sino-Japanese treaty of Dec. 22, 1905.

In a series of secret treaties between Japan and Russia, the two countries divided Manchuria into two spheres of influence, under Russia in the north and Japan in the south. The Twenty-one Demands made by Japan in 1915 further consolidated her position and economic, political, and military privileges in Manchuria. Her special position in Manchuria was recognized by the United States in the Lansing-Ishii agreement in 1917. The Nine-Power Treaty of 1922 upheld the Open Door policy toward China but left Japan in possession of her previous gains in Manchuria. To Japan, Manchuria was in actuality her protectorate. Her support of the late Marshal Chang Tso-lin in defiance of the Chinese government and her "warning" to Chang Hsueh-liang against his full adherence to the Chinese National government in 1928 clearly indicated Japan's stand. Chang, however, ignored the Japanese warning and announced his allegiance to the National government on Dec. 31, 1928. After years of quasi independence, the northeast again became, *de facto* as well as *de jure*, an integral part of the Chinese Republic.

In 1924, the Soviet government renounced all rights and privileges which the czarist regime had acquired by unequal treaties in Manchuria and other parts of China.

Under the overall supervision of the National government, Chang Hsueh-liang further intensified the reconstruction program launched by his father, Chang Tso-lin, to break the Japanese hold on Manchuria. This prompted the Japanese to take direct action. On Sept. 18, 1931, Japan engineered the so-called Mukden Incident and within a few days occupied all of Manchuria. The puppet state of Manchukuo was established under Japanese direction on March 9, 1932, with Pu-yi (Hsuan T'ung) as the chief executive. He was later proclaimed the emperor of Manchukuo on March 1, 1934.

China appealed to the League of Nations for the peaceful settlement of the Mukden Incident. The League, after prolonged deliberations, sent a commission of inquiry to the northeast under the earl of Lytton. The commission's report, known as the Lytton report (published Oct. 2, 1932), said that "the military operations of the Japanese during this night (September 18) cannot be regarded as measures of legitimate self-defense." And in regard to the establishment of the puppet state in the northeast, the report said the two factors without which the new state could not have been formed "were the presence of Japanese troops and the activities of Japanese officials, both civil and military. . . . For this reason the present regime cannot be considered to have been called into existence by a genuine and spontaneous independence movement."

Meanwhile, Chinese guerillas resisted with what they had against Japan's attempt to impose Japanese rule over Manchuria.

The first few years of the Manchukuo state saw large-scale "pacification" campaigns launched by the Japanese Army to suppress Chinese resistance. Beginning from 1936, Japan launched a five-year plan in Manchuria to make the territory the arsenal and granary of the Japanese Empire through the exploitation of the rich resources and cheap labor in the northeast. From the beginning, the Manchukuo economy was a planned economy. The Manchukuo five-year plan, revised in 1938, laid special emphasis on strategic industries and supplemented the Japanese four-year plan. Most of the Manchukuo products were raw material or half-finished products to supply Japanese factories. Japan also dominated all economic life of the northeast. Early in 1934, by the Oil Monopoly law, all foreign companies, including Standard Vacuum Oil and Texas Oil of the United States, were forced out of business. By the Emergency Foreign Trade Control law of 1936, the Foreign Trade Control law of 1937, and other trade measures, the importation and exportation of practically all commodities became a matter of exclusive privilege of Japanese interests. Two Japanese-owned companies controlled all the industrial enterprises. The South Manchurian Railway Company monopolized the railways, highways, harbors, bus and steamship services, docks and warehouses, and coal and oil at Fushun. The Manchurian Industrial Development Company controlled the coal, iron and steel, light metals, automobile and airplane industries. The Agricultural Produce Corporation controlled all crops from planting to consumption in Manchuria.

To complete the Japanese control over Manchuria, the USSR sold her share in the Chinese Eastern Railway in Manchuria to Manchukuo in 1935.

The recovery of the northeast was one of China's war aims. The Cairo declaration in 1943 stated, among other things, the return of Manchuria to China after the war. (See PACTS AND CONFERENCES.) The letter and spirit of this declaration, however, was violated by one of the Yalta secret agreements in which, without China's knowledge and consent, the United States and Great Britain agreed that the USSR, in return for going to war against Japan, would receive a number of rights in Manchuria. The United States was to use her influence to make the Chinese accept the Yalta *fait accompli*. Accordingly, the Chinese government signed, on Aug. 14, 1945 in Moscow, with the Soviet government a treaty which provides, among other things, the independence of Outer Mongolia; the joint ownership, for 30 years, of the Chinese Changchun Railway which comprises the former Chinese Eastern Railway and the South Manchurian Railway; the establishment of Port Arthur as a joint Chinese-Soviet naval base under Soviet garrison; and the establishment of Dairen as a free port with a Soviet port master but a Chinese mayor.

The USSR declared war against Japan on Aug. 8 (effective Aug. 9), 1945, six days before Japanese surrender. Soviet troops occupied the entire Manchuria. After repeated negotiations, they evacuated the northeast, with the exception of Port Arthur and Dairen, in April 1946, but not until they had stripped the northeast of its industrial and communication equipment and materials. Meanwhile, the Soviet evacuation coincided with the arrival in Manchuria of Chinese Communist troops who were also able to find exactly where the Japanese arms, which were surrendered to the Soviet troops, were stocked.

Chinese Communist troops took Changchun, capital of the northeast, on April 17 and Harbin on April 25, 1946. They also took over northern, eastern, and southern Manchuria following the evacuating Soviet troops. Government troops recaptured Changchun on May 23. In cities evacuated by the Chinese Communists, whatever industrial equipment had been left by the Soviet troops was destroyed by the Communists. Fighting continued in the northeast between nationalist and Communist troops into 1947.

Since the Chinese recovery of the northeast, the territory has been under the administration of provincial governments which are under the overall supervision of the President's Headquarters in the northeast. A Northeast Economic Council directs all economic activities in the territory. The Chinese Communists have their own system of administration in areas under their occupation.

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**MANCHUS**, a Tatar people of Tungusic origin, descendants of the Jurchin or Niu-chi, who overran northern China in the 12th century and established the Kin or Golden dynasty, later overturned by the Mongols, and of the tribes who followed Nurhachu (1559-1626) and his successors in his conquest of Liao-Tung and Liao-si, in the first half of the 17th century, who aided the Chinese general, Wu-san-kwei, in suppressing the rebel Li-tse-Ching, and who retained the country for themselves, establishing in 1643 the Ta-Tsing, or "Great Pure" dynasty which ruled China down to the establishment of the republic in 1912. They form a very small minority of the population of China to-day; they are a quiet, inoffensive people noted for their politeness. They now speak the Chinese language, their own tongue being well-nigh extinct. Physically they are rather tall, with mesocephalic head. The famed Chinese queue, but recently abolished, was introduced by the Manchus and was at first an insignia of the subjection of the Chinese to the Manchus. Buddhism in the Chinese form of to-day also dates from the Manchu conquest. For the history of their conquest and rule in China see CHINA, *History*. Consult Giles, *China and the Manchus* (Cambridge 1912); Kent, P. H. B., *The Passing of the Manchus* (London 1912); Ross, *Manchus; or The Reigning Dynasty of China, their Rule and Progress* (London 1891).

**MANCINI**, man-chē'nē, a name borne by the five nieces of Cardinal Mazarin. They were born in Rome and summoned by their uncle to Paris, where they played a conspicuous part in the court of Louis XIV during the early years of his reign. They were: (1) LAURE (b. 1636; d. 1657), the amiable and pious companion of Louis XIV's boyhood. She became the mother of Louis, Duke of Vendôme, one of the greatest generals of the Grand Monarque. (2) MARIE (b. 1639; d. about 1715), for whom the king conceived a violent affection, but in 1661 Mazarin gave her in marriage to Prince Colonna, constable of Naples. (3) OLYMPE (b. 1640; d. 1708), a witty and attractive woman, who became wife of Eugène de Savoie-Carignan, Count of Soissons, and mistress of the queen's household. (4) HORTENSE (b. 1646; d. 1699), the most attractive and beautiful of the Mancini. In 1666 she left her husband, the Duke de Mazarin, and became one of the chief beauties of King Charles II's court. The king pensioned her, and after the Revolution of 1688 she lived in retirement in Chelsea. (5) MARIE ANNE (b. 1649; d. 1714) was the wittiest and most vivacious of the sisters. In 1662 she married the Duke de Bouillon, and her salon became the center of social and intellectual life at Paris. She patronized La Fontaine, Corneille and Molière. She died in Clichy. Consult Chatelauze, *Louis XIV et Marie Mancini* (Paris 1880); Williams, A. N., *Five Fair Sisters* (New York 1906).

**MANCO INCA I**, ing'ka, Peruvian ruler: b. about 1500; d. 1544. He was the second son of the inca Huayna Capac (q.v.), who died about 10 years after the first arrival of the Spaniards, dividing his kingdom between his legitimate successor, Huascar, and a younger son, Atahualpa. The latter, after having made war upon Huascar, and put him to death, was himself captured and executed in 1533 by Pi-

1846 the remaining families of the tribe took up their residence at the Fort Berthold Reservation. The Mandans were not a nomadic people, but resembled the Pawnees, living in log houses with village administration and local government. They were an agricultural people, raising corn, tobacco and other crops.

**MANDAN**, N. Dak., city and Morton County seat; alt. 1,642 feet; on the navigable Missouri River, the Northern Pacific Railroad, and two airlines; 5m. W. of Bismarck. The city is situated in a wheat-growing and livestock-raising region, and is a Northern Pacific division point and car-shop center. The State Training School, for juvenile delinquents, is located here, and near by are the U. S. Northern Great Plains Experimental and Dairy Stations, and the Fort Lincoln State Park. In the park are the remains of a Mandan Indian village, an historical museum, and restored block houses. Mandan was settled in 1872, and incorporated as a city in 1891. It has commission government and a city-owned water system. Pop. (1940) 6,685.

**MANDARIN**, the term usually applied in China by foreigners to government officials of every grade. It is supposed to be derived from the Portuguese *mandar*, to command, or from the Sanskrit *mantrin*, counsellor; the Chinese equivalent is *kwan*, which signifies literally a public character. There are nine ranks, distinguished by different buttons.

**MANDARIN DUCK**, a small Chinese duck (*Aix galericulata*) closely related to the American wood-duck (*A. sponsa*), and dressed in an exceedingly beautiful plumage of metallic green, purple, chestnut, white and black. It has long been domesticated by the Chinese, and as it is said to pair for life, is held up by them as a model of marital virtues; and it has been introduced upon park waters and ornamental grounds in America and Europe.

**MANDAT**, mǎn-dá, the name given to a kind of paper-money in the French Revolution. After the assignats, which had been kept in circulation by the violence of Robespierre, had lost all credit, a new money was created—the mandats—founded, like the assignats on the credit derived from the confiscated property, but with the essential difference that specific pieces of property, enumerated in a table, were pledged for the redemption of the bills, while the assignats furnished only a general claim. These mandats were issued in accordance with the law of 1796, to the nominal value of \$480,000,000. A forced circulation was given to them, by which the government was enabled to defray the expenses of the approaching campaign.

**MANDATE**, *in law*, a term derived from the Roman civil law. It may be defined as a bailment (delivery) of a chattel or chattels to a person who is to do something with or about the things bailed, entirely without compensation.

**MANDATED TERRITORIES**. The system of "mandates" as a substitute for the direct annexation of former German and Turkish territories, following the World War, was a creation of the Peace Conference at Versailles. These mandated territories are administered by the countries to which they are assigned under the supervision of the League of Nations. Ter-

ritory aggregating 1,250,000 square miles, with a population of over 15,000,000 was placed under this form of government. These territories are divided into three classes: (A), those taken from Turkey; (B), former German colonies in Central Africa, (C), former German Southwest Africa and the former German possessions in the Pacific. The Allied and Associated Powers reserved the right to distribute these territories and to draft mandates before turning over the system to the League of Nations, and such a distribution was made on 7 May 1919. This covered the B and C mandates; the disposition of the A mandates was deferred until the San Remo Conference of premiers in April 1920. At this meeting Palestine and Mesopotamia were allotted to Great Britain, and Syria and Lebanon to France. The required drafts for each separate mandate having been prepared, the C mandates were approved by the Council of the League of Nations on 17 Dec. 1920. These gave former German Southwest Africa to the Union of South Africa, Nauru Island to the British Empire, New Guinea to Australia, Western Samoa to New Zealand, and the Caroline and Marshall Islands to Japan. Mandates of the B class were not approved until 1 Aug. 1922, when northern Kamerun was given to Great Britain, southern Kamerun to France, western Togoland to Great Britain, eastern Togoland to France, Urundi and Ruanda to Belgium, and German East Africa to Great Britain. For historical, political and sentimental reasons the A mandates formed the most interesting group. France favored the inclusion of Palestine with Syria under her rule, and this arrangement, from a racial and territorial standpoint, was logical. The peculiar position and influence of Great Britain in Palestine made this impossible, and on 24 July 1924, mandates for Palestine to Great Britain, and Syria and Lebanon to France were confirmed by the Council. Conditions in Mesopotamia had created international complications, and the mandate for this territory was not approved until 1925, although Great Britain virtually held suzerainty over the country by virtue of the San Remo agreement. The Permanent Mandates Commission, appointed by the League of Nations, has general supervision over the mandates, and regular reports on the administration of the territories must be made to this body.

**MANDAYA**, mǎn-dǎ-yǎ, a Philippine tribe of the Malay race living in the commandancia of Bislig, and the district of Dávao, island of Mindanao. They are bloodthirsty and head-hunters, mostly heathen, though Jesuit missionaries have converted some to Christianity (See PHILIPPINE ISLANDS). Consult Cole, F. C., 'Wild Tribes of Davao District, Mindanao' (in 'Field Museum Publication 170,' Chicago 1913).

**MANDEL**, mǎn'dél, Eduard, German engraver: b. Berlin, 15 Feb. 1810; d. there, 20 Oct. 1882. He studied in Paris with Henriquel-Dupont, and in 1842 became professor of engraving at the Berlin Academy and director there after 1856. He was one of the greatest of modern German engravers, the most important work of his being the plate of Raphael's 'Madonna di San Sisto,' his latest effort. Other works are the plate after Hildebrandt's 'Warrior and Child' (1835); plate of Bega's

'Lorelei' (1837); Van Dyck's 'Portrait of Himself' (1841); 'Titan's Portrait of Himself' (1843); Van Dyck's 'Charles I' (1850); Raphael's 'Madonna Colonna' (1855); 'Frederick the Great'; 'Madonna della Sedia' (1865). Consult Pietsch, 'Eduard Mandel und seine Werke' (Berlin 1883).

**MANDERSON, Charles Frederick**, American lawyer and politician: b Philadelphia, 9 Feb 1837; d 1911. He received his early education in Philadelphia, removed to Canton, Ohio, in 1856, studied law and was admitted to the bar in 1859. He was city attorney in Canton, 1860-61, at the outbreak of the Civil War he enlisted as a private in the Union army, served in the campaigns in the Middle West and rose through the intermediate grades to the rank of brigadier-general of volunteers. He was severely wounded at the battle of Lovejoy's Station, Ga., and resigned from the army in 1865 on account of his wounds. He resumed his law practice in Stark County, Ohio, but removed to Omaha, Neb., in 1869. Here he soon became prominent in public affairs, was city attorney for more than six years and a member of the Nebraska Constitutional Conventions in 1871 and 1874. In 1883 he was elected to the United States Senate, serving until 1895, and being chosen speaker pro tem in two Congresses, 1889-93. After 1895 he was solicitor for the Burlington system of railroads, west of the Mississippi; and was president of the American Bar Association in 1900-01. He published 'The Twin Seven Shooters' (1902), and several addresses on political and legal subjects.

**MANDEVILLE, Bernard de**, English writer: b. Dort, Holland, c. 1670; d. London, 21 Jan. 1732 or -33. He was educated at the Erasmus School, Rotterdam, and at the University of Leyden, where, in 1691, he received the degree of doctor of medicine. The date and occasion of his removal to England are unknown; but he appears soon to have settled in London where with but small success he practised his profession. He lived obscurely, with distillers and Dutch merchants as his ordinary acquaintances. Franklin, in his 'Autobiography,' records that in 1725, at "the Horns, a pale-ale house in — Lane, Cheapside," he was introduced "to Dr. Mandeville, author of the 'Fable of the Bees,' who had a club there, of which he was the soul, being a most facetious, entertaining companion." Franklin at this time was merely a struggling young printer, unknown to fame: Mandeville gained no honor from his acquaintance. Mandeville had, however, a few acquaintances outside his tavern circle. Of these, the most important was Lord Macclesfield, the chief justice, at whose house Mandeville also met Addison. Of their world, however, Mandeville was never a real part, socially or intellectually.

Mandeville wrote much both in verse and prose; but his chief claim to notoriety was the authorship of the 'Fable of the Bees.' This, in its earliest form, consisted solely of a rude poem, in octo-syllabic couplets far from Miltonian, entitled, 'The Grumbling Hive, or Knaves turned honest.' In it, he related how, so long as they remained unscrupulous, the bees increased in numbers and prosperity, and how

by their moral reformation the bees gained only their material ruin. He concluded that

"To enjoy the world's conveniences,  
Be famed in war, yet live in ease,  
Without great vices is a vain  
Utopia, seated in the brain.  
Fraud, Luxury, and Pride must live,  
While we the benefits receive."

Of this piece, the earliest known edition is that of 1705. Mandeville's assertion that an earlier edition was printed is unsupported by evidence. In 1714, Mandeville reprinted the poem with prose additions, the whole bearing the new title 'The Fable of the Bees, or Private Vices Public Benefits.' This he further enlarged in the edition of 1723.

At this point, the grand jury of Middlesex interfered, and, in July 1723, presented the 'Fable' as a nuisance. Immediately the book became a subject of general attack. Richard Fiddes and John Dennis in 1724, William Law, Francis Hutcheson in 1725-27, Aichibald Campbell in 1728 and Bishop Berkeley in 1732, all assailed Mandeville in turn. By Law and by Berkeley, Mandeville was intellectually outclassed; but he held up his side of the argument, adding to his 'Fable,' in successive editions, tract after tract. That the 'Fable' should be thus attacked is not surprising. Its fundamental thesis, that private vices are public benefits, was as subversive of morality as its illustrative material was foul and its style plausible and forceful. Whether Mandeville was sincere or ironical in his argument is in dispute. That he thoroughly enjoyed his own foulness cannot be doubted. But at least he accomplished one good thing; he pricked the sham morality of Shaftesbury. Other works by Mandeville are 'Esop Dressed, or a Collection of Fables Writ in Familiar Verses' (1704); 'Free Thoughts on Religion' (1720); 'Enquiry into the Causes of the Frequent Executions at Tyburn' (1725). Consult Robertson, J. M., 'Pioneer Humanists' (London 1907).

**MANDEVILLE, Sir John**. The alleged author of a mediæval book of travels which enjoyed great popularity. A large number of manuscripts are in existence, the most important of which are in Latin, French and English. The earliest version is in French, dating from the latter part of the 14th century, and upon this all the others appear to be more or less directly based. There is no English manuscript antedating the 15th century. The statements in the prologue regarding the translation are to be distrusted, and the autobiographical matter is contradictory. An exaggerated importance has sometimes been attached to the compiler of the work as the father of English prose, because of the statement in one of the English manuscripts that he had translated it out of French into English in order that every man of his nation might understand it. Errors in the translation prove that the man who wrote the French version and the man who made the English rendering cannot have been one and the same person.

The travels consist, in the main, of an account of the Holy Land and the routes thither, followed by a description of various parts of Asia. The narrative is almost wholly spurious, being made up of paraphrases and borrowing from various sources — travel-books, bestiaries, works on Eastern manners, legends, romances,



etc. The first half of the book is chiefly dependent upon the travels of William of Boldensele, a German who flourished in the 14th century, and the second part upon the work of Friar Odoric of Pordenone (about 1330). The only portions which may reflect personal experience are those dealing with Jerusalem and Egypt, which it is not impossible that the compiler may have visited. The story abounds in all kinds of adventures and marvels, related with an air of sober truth. There are accounts of monsters and curiously misshapen men, of regions haunted by devils, of the Fountain of Youth, of the Phoenix, of the realm of Prester John, etc. The narrator must have been a man of wide reading, and he certainly displays considerable skill in the selection and arrangement of his materials.

In the prologue the author states that his name is "John Maundeville, knyght," b at Saint Albans, England, and that he "passed the see," in 1322 (1332), whereupon he traveled through various countries. The epilogue asserts that the gout forced him to return, and that he occupied his leisure in writing his experiences. It has been found impossible to identify him with any historical John Mandeville.

The tomb of the reputed author of the 'Travels' was long shown at Liège, with an inscription to "Joannes de Mandeville, alias dictus ad barbam." Important in this connection is the testimony of one Jean d'Outremeuse, in a 'Myreur des Histors,' now lost, to the effect that there died in Liège, in 1372, a physician named Jean de Bourgogne, "dit à la barbe," who declared himself on his death-bed to be "Jean de Mandeville, chevalier, comte de Montfort en Angleterre," his real name having been concealed because of a crime committed in England. The veracity of D'Outremeuse is open to suspicion, but it has been thought that this Jean de Bourgogne may have been one John de Burgoyne, who was forced to leave England in 1322, and that he compiled the 'Travels,' borrowing the name of one John de Mandeville, who was concerned in the murder of Gaveston. At all events, Jean de Bourgogne was known in mediæval times as the author of a treatise on the plague, which is bound up in one instance with a version of the 'Travels.' It seems probable, then, that this man, whatever his past history may have been, was the real author of the latter work, and that he preferred to conceal his identity under the pseudonym of Mandeville.

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**MANDINGOES**, mǎn-dēng'gōz, a linguistic group of West Africa, remarkable for their intelligence. The original country of this people was the north slope of the high table-land of Senegambia, between the head-waters of the Niger and Senegal. Their language is more widely diffused, and more employed by translators than that of any of the other languages of West Africa. They formed at one time a single large empire, but are now widely scattered. The hair is woolly but other facial

negro characteristics are absent. From the Arabs they have derived a high degree of culture and are far removed from savagery. Their religion is Mohammedan. Consult Johnston, Sir H. H., 'Liberia' (2 vols, London 1906).

**MANDIOCA**, the staple food of Brazil. See CASSAVA.

**MANDOLIN**, a musical instrument, belonging to the lute species, played with a quill or plectrum as well as with the finger. It is of Italian origin, but latterly has become common in all civilized countries. In the usual form it has four pairs of metallic strings and a finger-board or neck with numerous frets across it. Operatic composers have occasionally employed the mandolin to obtain characteristic effects. The commonest form of this instrument is the Neapolitan with a range G—E'. Other varieties are the Milanese with six strings, the Spanish with six double strings and the Turkish with seven double strings. There are four double strings in the Neapolitan.

**MANDRAGORA.** See MANDRAKE.

**MANDRAKE**, a genus of perennial herbs (*Mandragora*) of the order *Solanaceæ*. The species, of which only three are described, are almost stemless, thick-rooted and large-leaved, with rather large whitish or bluish bell-shaped flowers, followed by globular berries. The plant is chiefly interesting from the numerous allusions to it in old writings, the superstitions relating to it being mainly in connection with its fetid, reputedly poisonous root, which, from a fanciful resemblance of its roots to the human figure, was considered an aphrodisiac.

The May-apple (*Podophyllum peltatum*), of the order *Berberidaceæ*, is often called "mandrake" in the United States, where it is common east of the Mississippi River. It is a perennial herb which sends up umbrella-shaped leaves, usually two at the summit of a stem and bearing one or two creamy, fragrant flowers in the axil. A mawkish yellow fruit about the size of a large cherry develops during early summer. The fruits "are relished by pigs and boys." The creeping rootstocks have been used medicinally.

**MANDRILL**, the largest and one of the most repulsive and savage of the African baboons. (See BABOON). Consult DRILL.

**MANED WOLF**, a long-legged, slender-bodied, long-nosed, brightly reddish wolf (*Canis jubatus*) of eastern South America, which may be regarded as one of the "aguas" or fox-dogs (qv). It is a denizen of forests, not being known south of the northern edge of the Argentine pampas; and goes about alone at night and secretly, seeking its food, which consists mainly of small rodents, frogs, insects and the like, and even some fruit. It will sometimes attack sheep, but is remarkably timid, and no one fears it.

**MANES**, mā'nēz, among the Romans, the souls of the dead. The good spirits were also called *lares*, and the evil *larvæ*. The manes were reckoned among the infernal gods; but a belief was prevalent that they sometimes appeared upon the earth in the form of ghosts, particularly on the 30th of August, 4th of October and 7th of November; whence the Romans considered these unlucky days.

**MANES WORSHIP**, from Roman *Manes* (q.v.), a term to denote the worship of the dead, whether of an ancestor of the particular worshiper or of some deified hero of his race. Herbert Spencer thinks it developed from the belief in an other self, which survived after death, and the manes worship was the outcome of a desire and endeavor to propitiate the ghost. Sir John Lubbock says of manes worship that it "is natural development of the dread of ghosts."

**MANET**, ma'nā', Edouard, French artist: b. Paris, 23 Jan. 1832, d. Paris, 30 April 1883. Originator of the Impressionist movement, which finds its greatest expression in Claude Monet, Manet worked in an original manner before Impressionism was thought of. He rendered great service to the movement, not solely by his works, but by taking upon himself the criticisms directed upon the whole Impressionist School. Degas, Monet and Renoir, bold in art but timid of nature, resigned themselves to the misunderstanding and hostility of the public; but the more courageous Manet defended the movement with a strong controversial pen. He fought valiantly for himself and all the artists associated with his name.

Manet studied with Couture about 1850 and traveled throughout Europe, growing enthusiastic over Rembrandt, Tintoretto, Velasquez and Goya, painted some fine works such as the 'Buveur d'absinthe' and the 'Vieux musicien' and in 1861 exhibited at the Paris Salon portraits of his parents and the 'Guterero.' His 'Déjeuner sur l'herbe' attracted much attention. 'Olympia' (in the Luxembourg) attracted more hostile criticism. It was a technical experiment significant for the period of its composition. 'Angels at the Tomb of Christ,' 'Lola de Valence,' 'Toréador tué,' 'Acteur tragique,' 'Jésus insulté,' the 'Gitanos,' 'Rouvière' and portrait of 'Eva Gonzalès' appeared before 1870. About this time Manet cast his lot with the Impressionists. The 'Fight of the Kearsarge and the Alabama' announced this transformation of his style and was followed by 'Musique aux Tuileries,' the 'Bal de l'Opéra,' the 'Bon Bock' and the 'Liseur.' 'Argenteuil' (1875) shows his atmospheric researches. Next came a portrait of 'Desboutin' and the 'Linge' (1876), a portrait of 'Faure' as 'Hamlet' (1877); 'La Serre,' a symphony in blue and white in which George Moore, the author, appears in boating costume (1878); the scene in the 'Père Lathuille Restaurant' (1880); 'Portrait of Rochefort' (1881); and the 'Bar des Folies Bergère' (1882).

"This work of Manet," writes a French critic, "so much discussed and produced under such tormenting conditions, owes its importance beyond all else to its power and frankness." Ten years of developing the first manner, tragically limited by the war of 1870; 13 years of developing the second evolution, parallel with the efforts of the Impressionists. The period from 1860 to 1870 is logically connected with Hals and Goya; from 1870 to 1883 (when he died) the artist's work is complicated by the study of light. He had all the pictorial gifts which make the glory of the masters—full, true, broad composition; coloring of great power; blacks and greys, which cannot be found often

elsewhere than in Velasquez and Goya; and a profound knowledge of values. He tried his hand at everything. portraits, landscapes, seascapes, scenes of modern life, still life and under each in turn served his ardent creative brush. His pictures will always remain documents of the greatest importance on the society, the manners and customs of the Second Empire. A beautiful painter is what he was before everything else. It is almost inconceivable that the juries of the Salons failed to understand him. They waxed indignant over his subjects which offer only a restricted interest and they did not see the altogether classic quality of this technique without self-glorification, without tricks, without bitumen, of this vibrating color; of this rich paint, of this passionate design so suitable for expressing movement and gestures true to life; of this simple composition where the whole picture is based upon two or three values with the straightforwardness one admires in Rubens, Jordans and Hals. Manet occupies an important place in the French School. He is its most original painter of the second half of the 19th century, the one who has really created a great movement. His work, the fecundity of which is astonishing, is unequalled.

**MANETHO**, or **MANETHO SEBEN-NYTA**, Egyptian historian: native of Sebenytus, in the Delta, and of the priestly order. He is believed to have lived in the reigns of Ptolemy I and II and to have written in the reign of Ptolemy I (323-285 B.C.), or of Ptolemy II (285-247 B.C.). According to some he was priest of Diospolis or Heliopolis; others contend that he was high-priest of Alexandria. His name has been interpreted variously as "Beloved of Thoth" or "Beloved of Neith." Scarcely anything is known of the history of Manetho himself, and he is renowned chiefly for his Egyptian annals. On the occasion of Ptolemy I dreaming of the god Serapis at Sinope, Manetho was consulted by the monarch, and in conjunction with Timotheus of Athens, interpreter of the Eleusinian mysteries, declared the statue of Serapis, brought by orders of the king from Sinope, to be that of the god Serapis or Pluto; whereupon the god had a temple and his worship inaugurated at Alexandria. The fame of Manetho was much increased by his writing in the Greek language, and so being enabled to communicate from Egyptian sources a more correct knowledge of the history of his native country than the Greek writers who had preceded him. Of this history, only extracts given by Josephus in his work against Apion, and an epitome by Eusebius and other ecclesiastical writers, remain. It appears to have been written in a compendious annalistic style of narrative, resembling the accounts given by Herodotus. The work of Manetho was in three books, the first began with the mythic reigns of gods and kings and ended with the 11th dynasty of mortals; the second continued the history from the 12th to the 19th dynasty; the third from the 20th to the 30th dynasty, when Egypt fell under the dominion of Alexander the Great. The reigns of the gods are given as amounting to 24,900 years, and the epoch of Menes, founder of the monarchy, commenced 3,555 years before Alexander (332 B.C.). The difficulties attending the

reconciliation of this chronology with the synchronistic history of the Hebrews, Greeks and other nations, have given rise to numerous speculations and chronological systems since the revival of learning. The accession of newer and better information from the original sources of Egyptian monuments, papyri and other documents has considerably enhanced the general value of the history of Manetho, which, prior to their discovery, had fallen into discredit. But the restoration of the history of Manetho, notwithstanding all these resources and the positive epoch of the monarchy, are still to be sought, though certain dynasties, in the second and third books of his works, can be reconciled with monumental evidence. Besides the true work of Manetho above cited, another work, 'Sothis,' or the 'Dogstar' (in allusion to the cycle of heliacal rising of that star of 1461 years) dedicated to Sebastos or Augustus, the title of the Roman emperors, has been handed down; but there is considerable support for the opinion that it is spurious, and was added by the epitomizers; and another work, called the 'Old Chronicle,' in which the history was arranged according to cycles, was compiled by them. Besides the history, Manetho wrote 'Tōn Physikōn Epitome,' treating on the origin of gods and the world and the laws of morality; and another work on the preparation of the sacred *kyphi*, a kind of frankincense. The astronomical work called 'Apotelesmata' is a spurious production of the 5th century after Christ. Consult Boekh, 'Manetho' (Berlin 1845); Bunsen, 'Egypt's Place in Universal History' (London 1848-67); Muller, C., 'Historici Græci Minores' (2 vols., Leipzig 1870-71).

**MANEY, George**, American soldier and diplomat: b. Franklin, Tenn., 24 Aug. 1826; d. Washington, D. C., 9 Feb. 1901. He was educated at the University of Nashville, fought in the Mexican War (1846-47), in 1849 was admitted to the bar and in 1849-61 practised law. On 1 May 1861 he became colonel of the First Tennessee Infantry, and at Shiloh (6-7 April 1862) he commanded first his regiment and later the 2d brigade of the 2d division. Promoted brigadier-general for his conduct at Shiloh, he commanded the 3d brigade of Cheatham's division in Bragg's army at Murfreesboro (31 Dec.-3 Jan. 1863) and Chickamauga (19-20 Sept. 1863), subsequently was appointed to the command of Cheatham's division and participated in the battle of Atlanta (22 July 1864). In 1876 he was nominated by the Republican party for the governorship of Tennessee, but before the election retired from the contest. He was Minister to Colombia in 1881-83, and to Paraguay and Uruguay in 1889-93. In 1884 and 1888 he was a delegate to the Republican National conventions of those years. In 1868-77 he was also president of the Tennessee and Pacific Railway.

**MANFRED**, king of Naples and Sicily, 1258-66: b. about 1231; d. 26 Feb. 1266. He was a natural son of the Emperor Frederick II, on whose death, in 1250, he became Prince of Tarentum, and acted as regent in Italy in the absence of Conrad IV, his half-brother. After the death of Conrad he was regent of the kingdom during the minority of his nephew Conradin. At the instigation of Pope Alex-

ander IV a crusade was preached against him, and Manfred was temporarily driven from his kingdom, which, however, he soon recovered, and on the rumored death of Conradin had himself crowned king of Palermo, 10 Aug. 1258. The Pope at once excommunicated him and his followers, but Manfred marched into the papal territory and compelled acknowledgment as master of Tuscany. Through matrimonial alliances for himself and his daughter he sought to increase his power, and his administration of the government was efficient, benign and for a time prosperous. But the excommunication was renewed by Pope Urban IV, who also bestowed his kingdom on Charles I of Anjou, and a war ensued in which Manfred was finally defeated and killed at Benevento. After his death imprisonment and extreme cruelty were visited upon his widow and children.

**MANFRED**. Lord Byron's powerful and imaginative "witch-drama," 'Manfred' (1817), was composed under the spell of the awe-inspiring scenery of the Alps, which Byron had visited in 1816 on the tour through Germany and Switzerland recorded in the third canto of 'Childe Harold'. The hero is a sort of combination of Faust and of the Byronic type portrayed in the earlier verse tales, a lofty and defiant spirit, dwelling alone in a dark castle among the higher Alps, haunted by remorse for an act the nature of which we are left to guess. Seeking to interview the spirit of the dead Astarte, the victim of his crime, and to obtain her forgiveness, he calls up the spirits over whom he has control and at length resorts to the abode of the evil principle itself. The ghost is evoked, but returns an ambiguous answer to his question. On the morrow Manfred expires, after resisting a summons to repent from the old abbot of Saint Maurice and defying the demons who have come to possess his soul. Some biographers have seen in the poem a reflection of its author's relation with his half-sister, Aurora Leigh. In any case Byron has made his hero in his own image, infusing into him the characteristic Byronic spirit of proud rebellion and passionate despair. In style the poet aims at and partly succeeds in achieving an imaginative grandeur commensurate with his superhuman theme. 'Manfred' attracted the favorable notice of Goethe, to whose 'Faust,' translated in his presence by Monk Lewis in 1816, Byron is indebted for some of the essential elements in his drama. Consult 'The Works of Lord Byron' (edited by R. H. Prothero); and 'Cambridge History of English Literature' (Vol. XII).

JAMES H. HANFORD.

**MANGABEY**, mǎng'ga-bā, one of the odd West African monkeys of the genus *Cercopithecus*, nearly related to the guenons and to the macaques. They are distinguished by the whiteness of the eyelids and the backward growth of the hair on the crown of the head. Some of the species are well known, especially the sooty mangabey (*C. fuliginosus*) which always carries its long tail turned over its back. There are three or four species and they make docile pets.

**MANGALDAN**, mǎn-gāl-dān', Philippines, a pueblo of the province of Pangasinán, Luzon, situated 12 miles northeast of Lingayén, the

provincial capital. It is on the coast road and is the meeting point of several roads extending to towns in the interior, and is on the route of the railroad from Dagupan to Manila. Pop. 15,800.

**MANGALORE**, māng-gā-lōr', India, a seaport town, on the Malabar coast, capital of the district of South Kanara, Madras presidency. It is clean and well built, surrounded by groves of coconut palms and stands on the edge of a fine salt-water lake or back-water formed at the mouths of two rivers. The port will not admit of vessels drawing more than 10 feet of water, except in spring tides; but there is good anchorage off the mouth of the river, in five to seven fathoms. Tile-making is an important industry. The exports are principally coffee, rice, sandal-wood, cassia and turmeric; the imports sugar, salt and piece-goods. There is a Roman Catholic college, and the Basel Lutheran mission in India has its headquarters here. The Roman Catholics have a bishop and several churches, a considerable number of the natives belonging to this faith. It was captured by the Portuguese in 1596 A.D., and by the English in 1668, finally falling into British possession in 1799. Pop. about 53,000.

**MANGANESE**, măn-gā-nēs', a metallic element which is widely distributed in nature, though it never occurs except in combination with other elements. The dioxide was believed to be a compound of iron until 1774, when Scheele proved it to be a compound of a previously unknown metal, and in the same year Gahn prepared the element in its metallic form. It was first called "magnesium" from the fact that it was prepared from a compound then called "magnesia nigra" (and now known as manganese peroxide or dioxide); but in 1808 the name was arbitrarily changed to "manganese," by Buttmann.

Manganese may be prepared in the metallic form by reducing any of its oxides with carbon at a white heat, and this is the method followed commercially. For experimental purposes, however, it is easier to obtain it by reducing the chloride with metallic sodium or magnesium. The physical properties of manganese vary somewhat according to the precise way in which the metal is obtained. Its melting-point may be taken as 3500° F., its specific gravity as 7.4 and its specific heat is 0.122. It is a gray, hard, brittle, lustrous metal, susceptible of taking a high polish, and resembling iron in most respects, both physically and chemically. It is not magnetic, however. The pure metal does not appear to be affected by dry air, but moist air oxidizes it, at least superficially. Some authorities describe it as oxidizing readily in common air, and as decomposing water with almost as great a facility as potassium; but it appears probable that the specimens from which these results were obtained contained impurities of some sort. Metallic manganese is not used in the arts, but some of its alloys with iron, aluminum and copper are valuable. It is particularly valuable in steel, its presence in small amount increasing the hardness, tenacity and elasticity of the metal. It is added to the molten steel, in the process of manufacture, in the form of an iron-manganese alloy containing from 10 to 80 per cent of the latter metal, and known in the arts as "spiege-

leisen" or "ferromanganese." The "manganese" of commerce is usually not the metal itself, but a mixture of its oxides. Manganese is used in the steel industry almost entirely in the form of two alloys, ferromanganese and spiegeleisen. These are both alloys of iron, manganese and carbon. Ferromanganese may contain as much as 80 per cent of manganese, but averages in this country about 70 per cent. In spiegeleisen the percentage of manganese is much lower; the standard figure upon which the price is based is 20 per cent. The average manganese content is about 18 per cent. Both alloys are high in combined carbon, the amount of which runs up to 7 per cent. The manganese alloys are added to molten steel from the converter, or open hearth furnace, for the purpose of introducing both manganese and carbon. The manganese cleanses the steel by combining with the contained oxygen and, to some extent, with the sulphur, and then carries these impurities into the slag. The carbon is for the purpose of giving the steel the required hardness and strength. By adding larger amounts of the alloys, manganese steel is produced, which is noted for its hardness, tenacity and durability. It is much used in the wearing parts of heavy machinery. In recent years the tendency has been to use more ferromanganese and less spiegeleisen, on account of the much smaller amount of ferromanganese that it is necessary to add to the steel. Spiegeleisen usually has to be melted in a cupola furnace before using, but ferromanganese can be added direct. The latter also introduces less carbon, which sometimes is an advantage. Ferromanganese and spiegeleisen are produced by smelting a mixture of manganese ore and iron ore in an ordinary blast furnace. A high temperature is required and the amount of fuel used is much greater than in iron smelting. A considerable amount of the manganese goes into the slag. The slag from a ferromanganese furnace may contain as much as 10 per cent of manganese. A considerable tonnage of the iron-manganese alloys is now produced in the electric furnace.

Chemically, manganese is a dyad. It has the symbol Mn, and an atomic weight of 55 if  $O=16$ , or 54.6 if  $H=1$ . It forms numerous oxides, the best known of which are (1) the monoxide,  $MnO$ , from which the manganous salts may be prepared, and which is itself obtained by heating manganese carbonate out of contact with the air; (2) the sesquioxide,  $Mn_2O_3$ , which exists in nature as the mineral braunite, and which is also formed when the monoxide is heated in air to a red heat; (3) the red or manganic-manganous oxide,  $Mn_3O_4$ , which corresponds to the magnetic oxide of iron, does not form salts, and exists in nature as the mineral hausmannite; (4) the black oxide, or dioxide,  $MnO_2$ , which occurs in nature as pyrolusite and varvacite, and which is largely used in the arts in the preparation of oxygen and chlorine; (5) the trioxide,  $Mn_2O_3$ , which is difficult of preparation and very unstable; and (6) the heptoxide,  $Mn_2O_7$ , a heavy, dark green liquid, prepared by treating potassium permanganate with cold concentrated sulphuric acid. Several of these oxides also occur in a hydrated form, as minerals. Of the soluble manganous salts, the chief representatives are the sulphate and the chloride. Manganous sulphate,  $MnSO_4$ , is prepared by treating the dioxide with sulphuric

acid, oxygen being liberated at the same time in accordance with the equation  $\text{MnO}_2 + \text{H}_2\text{SO}_4 = \text{MnSO}_4 + \text{O} + \text{H}_2\text{O}$ . It crystallizes with five molecules of water, as a pink-colored salt, and is used in dyeing and in medicine. The chloride,  $\text{MnCl}_2$ , crystallizes with four molecules of water, and is obtained as a by-product in the manufacture of chlorine by the action of hydrochloric acid upon manganese dioxide. It is used in calico printing. Of the insoluble manganese salts we may specially note the sulphide and the carbonate. The sulphide,  $\text{MnS}$ , is thrown down as a flesh-colored precipitate, when a soluble manganese salt is precipitated by an alkaline sulphide. The carbonate,  $\text{MnCO}_3$ , occurs native as the mineral rhodochrosite, and it may also be obtained as a white precipitate by adding an alkaline carbonate to a solution of manganeseous sulphate or chloride.

Two other important classes of manganese compounds are known, in which the manganese does not act as a base, but as an acid-forming element. These are the manganates and permanganates, which may be regarded as the salts or "manganic acid,"  $\text{H}_2\text{MnO}_4$ , and "permanganic acid,"  $\text{HMnO}_4$ , respectively. The potassium salts of these acids are by far the most important ones. Potassium manganate,  $\text{K}_2\text{MnO}_4$ , may be prepared by melting manganese dioxide with caustic potash and a little potassium chlorate, dissolving the bright green mass so obtained in a small quantity of water, and crystallizing by evaporation in a vacuum. Potassium manganate is used in laboratory operations, but it is very unstable, taking up oxygen with great readiness, and depositing hydrated dioxide of manganese. If the green solution containing potassium manganate be allowed to stand in the air, it absorbs oxygen, changes in color to a bright purple and deposits hydrated manganese dioxide. The purple color is due to the presence of potassium permanganate,  $\text{KMnO}_4$ , which may be obtained, by crystallization, in the form of purple prismatic crystals. Potassium permanganate is a powerful oxidizing agent, and is extensively used in chemistry, in the arts and in medicine, on account of the facility with which it parts with oxygen, especially in the presence of organic matter. It forms the basis of "Condy's fluid," which is largely used as a disinfectant.

The chief ores of manganese are the black oxide pyrolusite ( $\text{MnO}_2$ , 63.2 % Mn); psilomelane ( $\text{MnO}_2 \cdot \text{H}_2\text{O}$ , 45-60 % Mn); braunite ( $3\text{Mn}_2\text{O}_3 \cdot \text{MnSiO}_3$ , 69.7 % Mn); wad which is an earthy oxide (Mn 15-40 %); manganite ( $\text{Mn}_2\text{O}_3 \cdot \text{H}_2\text{O}$ , 62.4 % Mn); rhodochrosite ( $\text{MnCO}_3$ , 61.7 % MnO), and franklinite [ $(\text{Fe}_3\text{Mn})\text{O}(\text{FeMn})_2\text{O}_3$ ]. The ores are often associated with other metals, particularly with iron oxides, and with silver ores. Like residual limonite (see IRON ORES) manganese ore is usually secondary, resulting from the removal of more soluble substances during the weathering of slightly manganiferous rocks. For many years prior to 1914 Russia was by far the greatest producer of high grade manganese ores. Most of this output came from one locality near Chiatouri, south of the Caucasus Mountains. Some engineers have estimated the total reserves of high grade manganese ore in this one district to be upward of 100,000,000 tons, although this has been disputed. For some time before the war Russia's production averaged

more than half a million tons yearly. Next in importance to Russia as sources of manganese are Brazil and India. In Brazil there was a rapid development of the industry and the production of manganese ore in 1917 was about 500,000 tons. As the war practically stopped the exportation of manganese from Russia and India, the deposits in Brazil assumed great importance, but in 1924 exports fell to 151,043 tons. The United States has never been a large producer of manganese ore. A writer in the *Mineral Industry* some years ago stated that the manganese output of the country was "insignificant because of the trifling character of the deposits." In 1914 the total production in the United States of ore containing 40 per cent or more of manganese was only 2,635 long tons. In the production of ferromanganese and spiegeleisen and in the other arts using manganese compounds it is desirable to have an ore containing at least 40 per cent of the metal. Before the late war it was almost impossible to find a steel maker willing to buy a lower grade. During the war some steel makers bought ore containing only 28 per cent manganese and were glad to get it. Most of the manganese bearing ores mined in the United States are classified as manganiferous iron ores, which may or may not contain silver and lead. In these ores the manganese is mainly valuable as a flux in smelting operations, although it can sometimes be used for making spiegeleisen. The domestic shipments of manganese containing 35 per cent and more of metallic manganese amounted in 1937 to 40,241 tons, having a value of \$1,062,399. Production was lower than the 1925-29 average which was 59,312 tons but there had been a steady increase after 1933 when total production was 19,146 tons. Largest output came from Montana. The production of manganiferous iron ore containing from 10 to 35 per cent manganese in 1937 was 151,955 long tons valued at \$778,840. Production of ore containing from 5 to 10 per cent manganese was 1,189,017 long tons with a value of \$3,078,919. Imports of manganese in 1937 totaled 911,922 long tons, valued at \$10,451,602. Largest imports were from Cuba and the Gold Coast. The domestic deposits are in many States, of which the most important are Arizona, Arkansas, California, Colorado, Georgia, Minnesota, Montana, Tennessee, Utah and Virginia. In 1910 the United States Geological Survey issued a very excellent monograph, Bulletin No. 427, entitled 'Manganese Deposits of the United States,' by Edmund Cecil Harden, giving very complete data in regards to ores, alloys, production and uses. The same author contributed a paper entitled 'Manganese Ores of Russia, India, Brazil and Chile,' to the 'Transactions of the American Institute of Mining Engineers' (Vol. LVI, p. 31). In the same volume there is an article by Joseph T. Singewald, Jr., and Benjamin Leroy Miller on 'The Manganese Ores of the Lafayette District, Minas Geraes, Brazil.' In the *Engineering and Mining Journal* (issue of 9 Feb. 1918) is a popular article by Henry V. Maxwell entitled 'Prospecting for Manganese.' See METALLURGY; STRATEGIC AND CRITICAL MINERAL SUPPLIES.

**MANGANESE BRONZE**, a metallic element in which the copper forming the base of the alloy is mixed with a certain proportion of ferro-manganese, and which has exceptional



qualities in the way of strength and hardness. Various qualities are manufactured, each suited for certain special purposes. One quality, in which the zinc alloyed with the treated copper is considerably in excess of the tin, is made into rods and plates, and when simply cast is said to have a tensile strength of about 24 tons per square inch. Another quality has all the characteristics of forged steel without any of its defects. Another quality is in extensive use for toothed wheels, gearing, brackets and all kinds of machinery supports. From its non-liability to corrosion it is largely employed in the manufacture of steamship propellers.

**MANGANITE**, native hydrated oxide of manganese,  $MnO(OH)$ , or  $Mn_2O_3 \cdot H_2O$ . It crystallizes in the orthorhombic system, but also occurs in columnar and stalactitic forms. It is brittle, and has a hardness of 4 and a specific gravity of about 4.3. It is steel gray to iron black in color, and opaque with a submetallic lustre. It occurs in the Harz region, in Norway and Sweden and in the British Isles. In the United States it is found in the Lake Superior mining district, and in Douglas County, Colo. It also occurs in Nova Scotia and New Brunswick. Manganite is used as a source of manganese for the preparation of spiegeleisen and other alloys, and also in the manufacture of pigments and dyes.

**MANGASARIAN, Mangasar Mugurditch**, American author and lecturer: b. Mashgerd, Armenia, 29 Dec. 1859. He was educated at Robert College, Constantinople, 1872-76 and at Princeton Theological Seminary. He entered the Presbyterian ministry in 1882 and held a pastorate in Philadelphia 1882-85, when he resigned to become an independent preacher and lecturer. In 1900 he organized the Independent Religious Society, Rationalist, at Chicago, and was its lecturer until 1925. He is the author of 'A New Catechism' (1902); 'The Truth about Jesus' (1909); 'How the Bible was Invented' (1910), 'The Crisis of the Churches,' and numerous other works on religious topics.

**MANGATAREN**, mǎn-gá-ta'rén, Philippines, a pueblo of the province of Pangasinán, Luzon, 18 miles south of Lingayén; it is on the Agno River road. Pop. 10,150.

**MANGE**, a cutaneous disease to which dogs, horses, cattle, etc., are liable. It resembles in some measure the itch in the human subject, ordinary mange being due to the presence of a burrowing parasite. Both local application and internal remedies are used in its cure. Frequent washing of the skin is essential. See ITCH.

**MANGEL-WURZEL**. See BEET.

**MANGIN, Charles Marie Emmanuel**, French general: b. 6 July 1866; d. Paris, 12 May 1925. He served from his 24th year in Tonkin and in every part of Northern Africa, and accompanied Marchand on his historic journey from the Congo to the Nile in 1898. He first came under public notice in 1911, when, as military instructor to the Moroccan forces of Sultan Mulai Hafid, he defended Fez against the rebellious Berber tribes. In August 1912 he led a flying column of 4,000 men from Fez to Marakesh, effecting a dramatic rescue of nine French prisoners held by the pretender El Hiba. He received the congratulations of his

government and was made a commander of the Legion of Honor. At the outbreak of the European War he was given a brigade command in the 5th Army, which took the shock of the first German onset at Charlevoix. At the Marne he led a division and was heavily engaged at the battle of the Aisne. After participating in various other battles he arrived at Verdun with his division in March 1916. Here he led his men to the recapture of La Caillette Wood and (22 May) to the brilliant but shortlived reconquest of Douaumont. He was placed in command of the new 3d Colonial Corps in June and given charge of the crucial sector on the right bank of the Meuse. In October his command recaptured Douaumont and also Fort Vaux, with nearly 5,000 prisoners. He deprived the Germans of a wide sweep of territory around Verdun in December, and in the spring, conducted a big offensive between Soissons and Rheims, which was suddenly stopped. Mangin was relieved of his command and relegated to an obscure post through a cabinet crisis. With the accession of Clemenceau, Mangin was sent back to the field. In the summer of 1918 he commanded the French-American forces operating between the Aisne and the Marne. In 1919 he commanded the French army of occupation, and in 1921 was sent to South America.

**MANGLE**, a machine for smoothing linen and cotton goods. See LAUNDRY MACHINERY.

**MANGO**, mǎn'gō, a genus of trees (*Mangifera*) of the family *Anacardiaceae*. The 30 species are natives of southeastern Asia, where some of them have been distributed by man throughout the tropics of both hemispheres. The wood of various species is used for boat and canoe making, for house building and for boxes. It is gray, rather soft and easily worked. The trees are valued also for shade, being of large size and attractive form, and very leafy, the leaves large, leathery and evergreen. It is for their fruits, however, that they are most esteemed. These are widely used for human food, especially in the East, either ripe, in which condition they are eaten raw, with or without wine, sugar and spices, or unripe as preserves, jellies or pickles. They are also used for making wine and glucose. The finer varieties are considered equal to the choicest pineapples and even to the mangosteen.

The most commonly planted and most widely distributed species is the common mango (*M. indica*), a native of India. It often exceeds 40 feet in height, bears terminal panicles of rather small pinkish or yellow flowers, followed by smooth kidney-shaped yellow or reddish fruits which often weigh more than half a pound. Each fruit contains one large flattened seed, almost as long and often nearly as wide as the fruit, but flattened like the seed of a melon. The kernel is often roasted and eaten like chestnuts. The pulp of the fruit is soft, luscious in the finer varieties but very fibrous in the inferior sorts. These have a more or less pronounced flavor, suggestive of turpentine, which is characteristic of all parts of the tree. Since 1782, when the mango was introduced into Jamaica with a lot of other plants taken from a French vessel captured on its way to Haiti, the fruit has spread throughout the West Indies and southern Florida. In Florida, however, the

freeze of 1886 destroyed all trees except those in the extreme southern part, where the mango is now confined. The market, which seems to be growing but is somewhat limited because of the prevailing ignorance regarding the fruit, is supplied mainly from the West Indies. California supplies little more than its home markets. The trees do best upon well-drained sandy land, and should be well supplied with potassic manures. They quickly fail to bear upon wet soils. They may be propagated by grafting, but since a large proportion of the varieties reproduce practically without change by seed this method is widely employed.

Several other species of mangoes are cultivated. For instance, the horse mango (*M. fatida*), a native of Malacca, is cultivated in India, and *M. sylvatica*, whose fruits are dried and used like prunes.

**MANGO-BIRD.** Several birds are called mango-birds in various parts of the world because they frequent mango-trees. The East Indian one is an oriole (*Oriolus kundoo*); the West Indian one, so called in Jamaica, is a humming-bird (*Lampornis violacea*), which may occasionally visit Florida.

**MANGO-FISH,** one of the threadfins, a small perch-like sea-fish (*Polynemus plebius*) which is numerous along Oriental coasts, and approaches the shore and is caught at the time when mangoes ripen. The same name is sometimes given to a relative in the West Indies (*Polydactylus virginicus*), called barbudo in the Cuban markets.

**MANGOSTEEN,** a tree (*Garcinia mangostana*) of the family *Guttifera*, native of the East Indies, sometimes cultivated in tropical America. It is one of the best-known fruits of the East Indies, and by many people is considered the finest fruit known. The fruits are about the size of a mandarin orange and of similar shape, with a thick, red-purple rind; the flesh is snow-white or cream-colored, so delicate that it melts in the mouth, and of delicious flavor. So far, attempts to grow the tree in Florida have been unsuccessful, and as the fruit does not bear shipping well it is little known outside the regions where it is grown.

**MANGROVE,** *măn'grōv*, a genus of trees and shrubs (*Rhizophora*) of the family *Rhizophoraceae*. The species, of which there are less than half a dozen, are all natives of the tropics, where they inhabit tidal marshes and the mouths of streams. They are remarkable for their aerial roots, which extend from the branches to the mud and then become trunks for the extension of the trees, which gradually advance even to low tidal mark; and also for their peculiar method of seed germination, the seeds sprouting while still attached to the twigs. The wood, which in some species is close-grained and durable, is used for fuel and to a small extent for other purposes; the bark, which is rich in tannic acid, is employed in tanning; the fruit of some species is edible and is used for wine making. The trees are important soil builders, their numerous roots serving to catch debris and by checking the current enhance the settling of mud from the water. Hundreds of acres of arable land have thus been formed in Florida. The best-known species is *R. mangle*.

**MANGROVE HEN,** a West Indian clapper-rail (*Rallus longirostris*), which seeks its food in the mangrove swamps.

**MANGROVE SNAPPER,** the gray snapper, an excellent food-fish, which abounds among the mangroves along the coasts of Florida and the Bahamas, and thence to Brazil. See SNAPPER.

**MANGUANGAS,** *man-gwan'gas*, a collective name for a number of heathen tribes living in the forests of the island of Mindanao, Philippines. They are of the Malay race. See PHILIPPINE ISLANDS.

**MANGUIANES,** *man-gē-anz'*, the natives of the interior of Mindoro, Romblon and Tablas (qqv), Philippines, they are divided into four branches, one of which is of Negrito blood, another is Mongoloid and the other two are of the Malayan race. There are several tribes, including the Bangot, the Buquil, etc. The term is also used in the island of Palawan to designate all wild natives of unknown origin. See PHILIPPINE ISLANDS.

**MANGUM,** *măng'gūm*, Willie Person, American legislator. b. Orange County, N. C., 1792; d. Red Mountain, N. C., 14 Sept 1861. He was graduated from the University of North Carolina in 1815, was admitted to the bar in 1817, in 1818 was a member from Orange County of the lower house of the State legislature and in 1819 became a judge of the Superior Court. From 1 Dec. 1823 to 18 March 1826 he was a Whig representative in the 18th and 19th Congresses; but this post he resigned, and again he was elected a judge of the Superior Court. He retired from the court in 1826, but filled the office a third time in 1828-30. He was a United States senator from 5 Dec 1831 to 1836, when he resigned, and from 9 Dec. 1840 to 3 March 1853; and in 1842-45 was president pro tempore of the Senate. Throughout nearly his entire term of service in Congress he was a leader of the Whigs; and in 1837 he received the 11 electoral votes from South Carolina for the Presidency of the United States.

**MANGUM,** Okla., city and Greer County seat, alt. 1,600 feet, on the Rock Island and the Missouri, Kansas and Texas railroads, 150m. SW. of Oklahoma City. It processes cotton. It has commission government, with a city manager. Mangum was proclaimed a city of the first class in 1906, by Territorial Governor Frantz. The place was named for A. S. Mangum, who held a grant of land on the site. Pop. (1940) 4,193.

**MANHATTAN,** one of the boroughs comprising the city of New York. See NEW YORK CITY.

**MANHATTAN,** Kans., city and Riley County seat, alt. 1,012 feet, at the confluence of the Kansas and the Big Blue rivers, and on the Union Pacific and the Rock Island railroads, 51m. W. of Topeka. There is a municipal airport. The city is a trading center and distribution point for a rich farming region, and has small local industries. It is a college town, the seat of Kansas State College of Agriculture and Applied Science (q.v.). There is a public library (Carnegie) and the college library. The city has commission government. Pop. (1930) 10,136; (1940) 11,659.

**MANHATTAN COLLEGE**, an institution in Manhattan borough of New York City directed by the Christian Brothers. It was opened originally (1849) as an academy for young men, under the name of the Academy of the Holy Name, but the constant increase of the student body and the consequent demand for higher branches of study forced the academy to adopt the college courses, which was done in 1853, the academy being then incorporated under the name of Manhattan College. The courses lead to the degrees of B.A., M.A., B.S. and C.E. The resources of the college are derived from tuition only, there being no endowment. The institution now occupies its new campus on the Spuyten Duyvil Parkway. It enrolls approximately about 1,000 men, values its plant at about \$2,750,000; has an income of approximately \$325,000.

**MANHEIM**, Pa., borough in Lancaster County, alt. 399 feet, on the Reading Railroad, 10m. NW. of Lancaster. Government: mayor-council. Pop. (1940) 3,831.

**MANI'**, *mă-ně'*, the indigenous peanut of Cuba, Peru and Chile. In Mexico and Central America it is called *cacahuete* (q.v.).

**MANIA**. See **INSANITY**.

**MANICALAND**, *mă-ně'ka-länd*, South Africa, a former territory of southern Rhodesia, situated on the border of Portuguese East Africa, east of Mashonaland, between the parallels of 18° and 21° S, and the meridians of 30° 30' and 33° E. It is now divided between Portuguese East Africa and Rhodesia. Manica is now a small district of the Portuguese territory. See **RHODESIA**.

**MANICHÆANS**, *măn-i-kě'anz*, the followers of Manes, Mani or Manichæus, as he is variously styled, a Gnostic teacher, whose opinions prevailed in western Asia and eastern Europe during the 4th and 5th centuries of our era. Manichæism is generally considered to be the Persian type of gnosis, as it is distinguished by Zoroastrian dualism, and other features of that system. Hebrew elements of religion and Buddhist doctrines were also found in Manichæism, which appears to have been an eclectic jumble of wild fancies, among which the soberest and strongest dogmas of the Christian creed were sometimes seen to be embedded. The Dualism of Manes was conceived of by him as manifested in two contiguous realms of light and darkness, good and evil. The kingdom of light included a heaven and an earth, the latter guarded by æons, or good spirits, and presided over by a spirit of goodness. From the kingdom of darkness sprang Satan and his evil angels. This confusion and mixture, in the universe, of light and darkness, originated before the creation of man, a creature of light and darkness combined in proportions varying in each individual. The human race is finally to be purged of darkness and sin. Jesus Christ was looked upon as dual in nature; there was Jesus who did not and could not suffer, *Jesus impatibilis*, a sort of phantom or immaterial personage, and *Jesus patibilis*, who suffered death upon the cross.

The practical side of Manichæism appears in the condemnation of marriage, or sexual indulgence of any sort, and the ascetic purification of hands, mouth or bosom, which kept the in-

itiated from eating animal food, contracting ceremonial defilement through the touch and indulging the flame of human passion in the heart. There were two classes of disciples, the initiated, or *perfecti*, and the *auditores*, hearers, or novices. Saint Augustine of Hippo was, for nine years before his conversion to Christianity, a Manichæan hearer. These hearers lived a much less strict life than the perfecti, and constituted by far the majority of the Manichæan sect. The clergy of this sect were organized after the model of the Christian ministry; their rite of baptism was performed with oil instead of water; they had also a eucharistic meal among their public ceremonies. The system spread rapidly through the Roman Empire and competed with Neo-Platonism in hostility to the Church. Diocletian persecuted the Manichæans, and under Justinian the profession of Manichæism was a capital crime. The system, however, flourished in Asia beyond the 10th century and has reappeared in some shape or other, and under different names at different times in subsequent periods of European history. Consult Routh, 'Acta Disputationis Archelai' (1848); Eusebius, 'Ecclesiastical History'; De Beausobre, 'Histoire critique du Manichéisme' (1734), and Harnack, 'History of Dogma' (1897).

**MANIFEST**, *in law*, a written instrument delivered by the captain of a ship to the customs officials setting forth in detail the goods shipped, the consignors, etc. If there are passengers on board, this must be stated, and if the ship is about to proceed to a foreign port, the coal or other fuel on board must be set forth.

**MANIFESTO**, *in international law*, a declaration publicly issued at the commencement of a war by a contending power to show the causes which justify such a measure. Manifestoes are in the form of public letters; they commence with a short address to the public in general, and are signed with the name of the person who issues them. See **INTERNATIONAL LAW**.

**MANIFOLDS**, *Theory of*. See **ASSEMBLAGES**. **GENERAL THEORY OF**.

**MANIGAULT**, Arthur Middleton, American soldier: b. Charleston, S. C., October 1824; d. 16 Aug. 1886. In 1846 he was elected first lieutenant of the Charleston company in the «Palmetto» regiment for the Mexican War, throughout which he served. In June 1861 he was elected colonel of the 10th regiment, South Carolina infantry, and in 1861-62 was in command of the 1st South Carolina military district. From the early part of 1862 he served in the army of the West successively under Bragg, Johnston and Hood, in 1862 was placed in command of a brigade, and in 1863 made brigadier-general. At Chickamauga he distinguished himself by his repeated assaults, and in the retreat before Sherman's invasion he did some vigorous fighting. His death was hastened by a wound received in the battle of Franklin, Tenn. (30 Nov. 1864). Subsequent to the war he was elected by the Democrats adjutant-general of South Carolina, serving until his death.

**MANIHOT**. See **CASSAVA**.

**MANILA**, *ma-nī'l'a*, capital of the Commonwealth of the Philippines, and its largest city and chief port; on the island of Luzon, in lat. 14° 58' 31" North; long. 120° 58' 8" East; on

Manila Bay, at the mouth of the Pasig River; terminus of the Manila Railroad. The city has been called the «Pearl of the Orient.» It lies west of a line drawn from Japan on the north to the middle of Australia on the south, with the Malay Archipelago between it and Australia, and the continental mainland of Asia, at Hong Kong, 700 miles to the northwest.

**Transportation.**—Manila, in normal times, is connected with ports in all parts of the world by steamship lines, freight and passenger; and has further connection with the United States by clipper air service, and with cities of Asia and Europe by airlines via Singapore and Hong Kong. Manila Bay, with an area of 770 square miles and a shore line of 120 miles, is one of the best harbors in the Far East. The modern port area affords deep, wide channels, abundant anchorage space, modern piers and warehouses, with mechanical cargo-handling equipment, and all the facilities of a natural harbor with the best of engineering improvement.

Inter-island transportation is provided by boat and airlines; intra-island, by railroad and bus. The Manila Railroad Company operates the railroads, which are owned by the Philippine government. Within the city of Manila passenger carriage is by bus, trackless trolley, street car, taxicab—and native vehicles, horse drawn.

**Industries and Trade.**—Prominent among Manila's industrial establishments are sugar centrals, rope and cordage factories, cigarette and cigar factories, coconut desiccating plants, and coconut oil mills. Other factories in the city make shoes, soap, rattan furniture, mats, and fiber hats. There are a number of canneries, and many food packing companies have headquarters here. An important and characteristic industry is hand embroidery.

Manila is the islands' center of trade. To and from it, via the other Philippine ports, passes the bulk of the islands' exports and imports, as well as of domestic, inter-island trade. More and more in Manila the old household industries tend to become mechanized, and there is increasing call by small factories for power service.

**Descriptive.**—The old city, the original Manila, a medieval walled town known as Intramuros, lies on the south side, or left bank, of the Pasig River. Here, within the ancient walls, are narrow streets, and houses of old Spanish type; here too are old churches and convents, and the University of Santo Tomás. This institution, founded by Dominican missionaries in 1605 and designated as a pontifical university in 1645, occupies a building that dates from 1611. Under the walls enclosing the old town were, in the era of Spanish rule, powder magazines and dungeons.

North of the river is the Binondo section. Just off the bridge is Plaza Moraga, from which runs a busy street called the Escolta; upon these the business section centers. Near by is Calle Rosario, with Chinese bazaars. Tondo, to the north, is a semislum district and is the city's most densely populated area. On higher ground are residential neighborhoods, and Malacañan, residence of the President of the commonwealth; formerly the governor general's palace.

South of the walled city is the Ermita section, and adjacent to it, along the bay shore, is the Luneta, a park from which leads Dewey Boulevard, lined with fine residences. Street

names collocate, piquantly, the native, Spanish, and American phases and aspects of the city's history: Taft Avenue, Plaza McKinley, Dewey Boulevard; and the Avenues Rizal, Isaac Peral, San Luis.

**Education and Culture.**—Since 1901 education in the Philippines has developed extensively. Where then Americans organized public school systems, Filipinos now administer them. Enrolment in the elementary schools of the islands is large. Many boys and girls go on to the high schools, many avail themselves of the excellent opportunities for vocational and professional training. In Manila there is an efficient and adequate public school system, organized and administered on American lines. Provision is made for adult education, and for the training of teachers, an office of adult education was opened in 1936. The percentage of illiteracy was placed at 80.7 in 1939; the average for the Commonwealth was 48.8.

Institutions of higher learning in Manila include the Philippine Women's University, the Far Eastern University, the Centro Escolar University; the National University, the University of Manila, the government-operated University of the Philippines, and Santo Tomás, mentioned above under *Descriptive*.

In Spanish times education and culture were guided principally by the Church. There was no newspaper published in Manila until 1822, and public schools were not authorized until 1863; now, in Manila, there is a demand for American magazines and books apparently far in excess of the requirements of the white residents and visitors, swift development of a native middle class, educated in the English language, is the explanation. Manila itself is the place of publication of a large number of periodicals printed in English, Spanish, or Tagalog dailies and weeklies, monthly magazines and quarterlies, in various fields—political, educational, agricultural, commercial, scientific, religious, and literary.

Manila has excellent facilities for entertainment and recreation: theaters, parks and playgrounds, athletic fields, and many clubs. The Philippine Exposition, held annually, in February, combines sports, pageants, educational and cultural exhibits.

**Libraries, Museums, Memorials.**—Manila has many fine libraries and museums. The National Philippine Library and the Philippine Museum have collections of the greatest value. The University of Santo Tomás maintains both a library and a museum. The Bureau of Science houses a reference library and collections of photographs and of Philippine flora and fauna. The aquarium, near one of the gates of the old wall, exhibits tanks containing specimens of marine life from Philippine waters. Another interesting seat of science is the observatory, founded by the Jesuit Fathers in 1865, now maintained with government co-operation, and operated by members of the society. It has gained worldwide recognition through its studies of earthquakes and typhoons. In the Luneta stands a statue of José Rizal (q.v.); a further memorial to him is the Rizal Stadium. In the old city hall (Ayuntamiento) is a statue of Juan Sebastian del Cano (q.v.), Spanish circumnavigator. In this building are kept valuable carvings and paintings, and archives containing documents of great antiquity.

**Buildings.**—The architecture of Manila is diversified. In the native section are flimsy structures, shacks thatched with nipa palm leaves. In the walled town are Spanish houses with barred windows, balconies overhanging the street, tiled roofs, and family shrines set into the walls; there are ancient Catholic churches, and palaces built for the Spanish rulers. And in the modern city there are theaters and hotels of modern American pattern; fine residences and club houses, and the public buildings, of which the government buildings and the post office are the most notable.

**Churches and Charities.**—Manila's oldest churches are Catholic; the Roman Catholic Cathedral, in the walled city, was dedicated in 1581. The Church of St. Augustine, also in Intramuros, is still older. The Episcopal Cathedral of St. Mary and St. John (1907) is surrounded by a grove of palms, acacias, and flame trees. Among the many other places of worship are the Cathedral of Tondo; First Baptist; First Church of Christ Scientist; Hongwanji (Japanese Buddhist); and the Methodist and Presbyterian missions.

The Philippine General Hospital and the Quezon Institute are important institutions; the latter specializes in tubercular cases. The Hospicio de San José, refuge for foundlings, stands on an island in the Pasig River. Other hospitals are St. Luke's (1907); Santiago, St. Paul's, and San Juan de Dios. Bilibid Prison is not only the largest but the best organized penal institution in the Far East, designed to rehabilitate its inmates, to whom it gives training in the trades.

**History.**—Fifty years after Magellan claimed the Philippines for Spain, that is to say in 1571, Spanish government was organized in the native city of Manila. Building of the defensive wall and moat was begun in 1790. In the 18th century the city was attacked by the Dutch and by the British, in their wars with Spain; the British held it from October 1762, to February 1763. From 1763 to 1898 it was held by the Spaniards; in 1896 a Filipino insurrection broke out, but failed to capture the capital. After the smashing of the Spanish fleet by Dewey in the Battle of Manila Bay (see UNITED STATES—*War with Spain*), Manila surrendered (13 Aug. 1898). During the ensuing Filipino insurrection against American rule, led by Emilio Aguinaldo (q.v.), an attempt was made to destroy the city. After a period of military government, administered from Manila, civil government was established, with headquarters in the city (1901); and when the commonwealth was inaugurated (15 Nov. 1935), Manila retained its established status in the Philippine regime. With the outbreak of war in Europe in 1939, the city's standing as capital of a possession anticipating severance added to its economic difficulties the problems of defense. When hostilities with Japan began on 7 Dec. 1941, the city found itself one of the three great bastions for the defense of the Far East—Hong Kong and Singapore being the other two. The city was repeatedly bombed in the early weeks of the war.

**Government.**—Manila is the seat of the commonwealth government. The city government is headed by a mayor, and the municipal legislative body is the council. The commonwealth pays a percentage of the cost of the city's government; the remainder is raised by

city taxation. Manila was incorporated as a city in 1901.

**Population.**—The 1939 census of the Philippines showed that Manila had a population of 623,492. In 1936 the population, as of 1 July, was officially estimated as 355,485.

**MANILA, University of**, founded in 1585 by Philip II of Spain. Later branches or affiliated schools were founded in different parts of the island. A seminary for the sons of Spanish nobles was opened in 1601, and 10 years later departments were added for the sons of those not belonging to the nobility and for the natives. The university was reorganized in 1857, and again after the American occupation. The departments are science, classics, law, medicine, theology, philosophy, engineering, pharmacy, arts and music. The usual degrees are granted. In 1926 there were about 1,000 students in attendance.

**MANILA BAY**, the largest bay in the Philippine Archipelago, indenting the western central coast of the island of Luzon. Its greatest dimensions are from the minor bay of Pampanga in the northwest to Point Kalumpan on the south, about 38 miles; from the delta of the Grande de la Pampanga River southwest to Corregidor Island is 31 miles; circumference 120 miles. The entrance between Point Kalumpan and Corregidor is about seven miles in width; that between Corregidor and Mariveles about two miles. There are lighthouses on either side of the larger entrance. The bay is surrounded by five provinces, and receives the waters of many rivers, including the Grande de la Pampanga, with its large delta, and the Pasig at Manila, which communicates with Laguna Bay, to the southeast, and has been dredged for navigation. The lands on both sides of the bay at the entrance are high and covered with vegetation, but the shores at the head of the bay are low and marshy, intersected by numerous small rivers, estuaries and tidal lakes. It is one of the finest harbors in the East, being free of obstructions to navigation, and affording excellent anchorage. But the water is so rough at times that it was necessary to construct large breakwaters to protect the shipping. Point Luzon is at the mouth. Submarine telegraphs are laid in the bay which run to San Francisco, to Hong Kong and to Iloilo. Manila, the capital of the archipelago, and Cavite, the United States naval headquarters in the Philippines, are on its shores; an artificial port is being constructed at Manila. In this bay Admiral Dewey won a victory over the Spanish fleet 1 May 1898.

**MANILA BAY, Battle of.** See UNITED STATES—*War With Spain*.

**MANILA HEMP**, or **ABACA**, *Musa textilis*. This species belongs to the plantain or banana family, the commercial fiber being derived from the stalk or trunk of the wild plantain of the Philippine Islands, and is classed as a structural fiber. The strongest and best of our hard cordage fibers, it is employed in the United States for standard binder twine and for all sizes of rope from the smallest dimensions to hawsers and cables. The old rope and the waste are employed as paper stock. The fiber is creamy white to reddish white, lustrous, easily separated, stiff and resistant, while its



lightness makes it advantageous for employment in cordage for the rigging and running ropes of ships. Structurally the bundles of fibres are very large, but easily separated into fibres of even diameter, the walls of the cells are of uniform thickness, growing slender toward the ends gradually and regularly. In breakage tests for textile strength, with English hemp—made by the British government—Manila stood a strain of 4,669 pounds against 3,885 pounds for hemp, ropes three and one-quarter inches in circumference and two fathoms long being used in each test. In the Philippine Islands the finer grades of the fibre are extensively used for fabric manufacture, the product being worn by the natives of both sexes throughout the archipelago. Mixed with cotton a durable fabric is produced well adapted to the climatic conditions of the islands. According to a recent report of the Philippine Bureau of Agriculture, the manila hemp plant was introduced into India in 1859 and the Andaman Islands in 1873. The plant is also said to be found in Borneo and Java, and attempts have been made to introduce it into other countries. It remains a fact, however, that the commercial fibre is produced only in the Philippines. The culture has been attempted without success in the West Indies, and seed was imported for trial in Florida only a few years ago; it was planted but it failed to germinate. Several species of banana yielding fair fibre are successfully cultivated throughout tropical and sub-tropical America, and in many other portions of the world. Banana fibre bears no comparison, however, with the Manila hemp of commerce, although the fibre of *Musa basjos* is produced commercially in Japan where it is employed for undergarments for summer wear, as well as for light dresses for the higher classes of Japanese.

Manila hemp first attracted attention commercially early in the last century, and was imported into Salem, and Boston, Mass., about 1824; samples of the fibre, however, were brought to this country by naval officers as early as 1820. The production of the textile had reached about 8,000 tons in 1840, 30,000 tons in 1860 and 50,000 tons in 1880. In 1900 the production was nearly 90,000 tons. It now averages about 100,000 tons. The United States took in 1930, 64,052 tons, valued at \$8,844,284 as compared with 72,190 tons, valued at \$13,496,000 imported in 1929. These figures relate to unmanufactured hemp only.

Regarding the specific localities of production and details of cultivation, preparation, etc., the student is referred to Bulletin of the Royal Gardens Kew (August 1894), to a Descriptive Catalogue of Useful Fibre Plants of the World (Washington 1897), and to the latest issues of the *Farmer's Bulletin* published by the Philippine Bureau of Agriculture, Manila.

The extraction of the fibre is a simple proposition. The *abaca* is cut near the roots when the plant is two to four years old, and just before blossoming; if cut earlier the fibre is finer but shorter. After striking off the leaves the trunk or stem is slit from end to end, and the sheathing layers of cellular matter, which form the petioles of the leaves, are separated, dried a day or two and then cut into strips three inches wide, and finally scraped until the fibre has been cleaned of all extraneous matters, soft cellular tissue, etc. The bundles of wet fibre are shaken

into filaments, washed, dried and sorted. This is the export fibre for cordage purposes, the fabric fibre necessitating further treatment by beating, which softens and subdivides the filaments. The export fibre is wrought into hanks and made into bales of about 270 pounds, when it is ready for shipment. Attempts to use machinery for extracting the fibre have not been successful, partly because the machines have not been adequate, and partly on account of native prejudice. There is a great waste by the hand methods of preparation which it is thought machine extension would obviate. See FIBRE; HEMP; JUTE; RAMIE; SISAL HEMP.

**MANIN**, *mā-nēn'*, **Daniele**, Italian patriot; b. Venice, 13 May 1804; d. Paris, 22 Sept. 1857. He studied at the University of Padua, was admitted to the doctorate of laws and practised at the bar. In politics he became the leader of the liberal class, and by 1847 had secured a solid reputation as a political economist. For anti-Austrian utterances made during that year and the next he was twice imprisoned, but while awaiting trial was set free by the populace upon arrival of news of the revolution of 1848 in Italy and France, was made President of the Republic of Saint Mark and given supreme power as head of the patriotic revolt. The Austrians were driven out, and during the siege, which began in the autumn of 1848 and lasted 12 months, Manin was at the head of the civil government, and to his counsels and patriotic spirit it was mainly owing that the Venetians maintained so long and brilliant a defense. After the capitulation Manin retired to Paris, where he maintained himself by giving lessons in Italian, and continued in various pamphlets and through the press to advocate the cause of Italian independence. Consult Martin, 'Daniel Manin and Venice in 1848-9'; Mortinengo, Cesaresco, 'Italian Characters' (1901).

**MANIOC**, or **MANDIOC**. See CASSAVA.

**MANIPLE**, (1) one of the divisions of the ancient Roman army. It consisted of 60 rank and file, two officers called centuriones and one standard-bearer called vexillarius. (2) In the Roman Catholic ritual a sacred vestment attached to the left arm, to leave the right at liberty for ministering. See COSTUME, ECCLESIASTICAL.

**MANIPUR**, *mān-i-poor'*, northeast India, a thinly populated native state now more frequently called Assam State, which is confusing because there is Assam province (q.v.). It consists principally of an extensive valley situated in the heart of the mountainous country which lies between Assam, Cachar, Burma and Chittagong; area, 8,456 square miles. The greater part of the state is covered with forest and jungle, and the wild animals include the elephant, rhinoceros, tiger, leopard, bear, deer and buffalo. The people belong to the Mongolian race, and are known as Manipuris. They are governed by a rajah, at whose court resides a British political agent under the control of the chief commissioner of Assam. The capital is Manipur, also called Imphal, lying in the Namkathay on Manipur River, which is tributary to the Irrawaddy, almost 250 miles north by west of Mandalay; pop. about 75,000. Most of the work is done by the Manipuri women, the men being lazy. The chief crop is rice. There is a special breed of ponies in the country, which are much

employed in the game of polo, the national sport of Manipur. There has been a political agent in Manipur since 1835. In 1891, in an outbreak headed by a member of the reigning family, the chief commissioner of Assam and the political agent were murdered; but the disturbance was soon put down and avenged. Pop. 446,000, composed chiefly of Hindus, Mohammedans, Christians and Buddhists. Consult Johnstone, 'Experiences in Manipur' (1896).

**MANIS, PANGOLIN, or SCALY ANTEATER**, an edentate mammal, belonging to the group *Squamata*, coextensive with which is the family *Manidae*. The body and long, thick tail are covered with horny, imbricated scales. The legs are short and very strong, and the toes are armed with powerful claws, enabling the animals to burrow rapidly. These animals can roll themselves into a ball, and are then protected by their scales, and they exhibit remarkable strength in holding their bodies in this protective attitude. The scales are regarded as formed of agglutinated hairs; and in the Asiatic species true hairs grow between the scales and extend beyond them. All dwell in burrows, come abroad only at night and subsist almost altogether on ants and termites, which they capture by means of their long, rope-like, sticky tongues. They have no trace of teeth; and in general structure show a close resemblance to the American ant-eaters. They range in size from the African *M. gigantea*, six feet, to two and one-half feet. They are comparatively common in some rocky districts of India and China. The latest review of the family shows that it contains seven species.

**MANISTEE**, măn-îs-têe', Mich., city and Manistee County seat, alt. 581 feet, on Lake Michigan at the mouth of the Manistee River, on the Pere Marquette and the Manistee and Northeastern railroads, and on state and federal highways; by rail, 147m. NW. of Saginaw. It has a natural harbor, which has been improved by extensive engineering works. The river flows through the city from Lake Manistee to Lake Michigan, and is navigable for vessels of moderate draft. A municipally owned and operated airport is three miles to the north, on a federal highway. The U. S. Coast Guard maintains a Manistee station with three power boats. Products of the city's industries are salt, chemicals, paper, drop forgings, motor boats, furniture, clothing, highway markers, pumps, and a widely varied line of miscellaneous articles. Lumbering, formerly the foremost local industry, has been largely replaced by exploitation of salt and bromine deposits underlying the city. In its public and parochial schools Manistee has almost 2,000 pupils; its public library contains more than 30,000 volumes, and its parks total 50 acres. Orchard Beach State Park is two miles north of the city, on a bluff overlooking Lake Michigan. Eighteen denominations are represented in the city's churches. There is a modern hospital. Service and civic clubs, two music clubs, women's clubs and a country club contribute to the community's social and civic resources. Before the white men came, the Indians occupying the land about the site of the present city were Chippewas. White traders and missionaries of early times frequently camped hereabout. Father Marquette visited the locality. It was in 1841 that the first permanent white

settlement was made. In that year one John Stronach and his son Joseph set up a sawmill. Here they found a strategic location for the lumber industry, as the river flowed through pine forests. In Manistee Lake there was good storage space for logs, and they could easily be floated down the stream to the mills for cutting. It was in 1882 that the salt deposits were discovered. Nineteen hundred feet underground is a stratum of salt rock 32 feet thick, and brine is pumped from a still lower depth, for use in manufacturing commercial salt. Manistee County was organized in 1855, and Manistee became a city in 1869. In 1861 the population was not more than 1,000; the Civil War and a disastrous fire retarded its development, but by 1869, the year of its incorporation as a city, the population had trebled. In 1871 the city was again almost destroyed by fire. A monument at the junction of state and federal highways marks a point on the old Chippewa Indian trail. «Manistee» is an Indian word meaning «Spirit of the Woods». Commission government has been adopted by Manistee, and there is a city manager. The commissioners, elected by districts, one from each district, choose a mayor from their own number. The water-supply system is municipally owned and operated, the water comes from wells. Pop. (1930) 8,078; (1940) 8,694.

**MANISTIQUE**, măn-îs-tek', Mich., city and Schoolcraft County seat, alt. 613 feet, on the north shore at the eastern end of Lake Michigan, at the mouth of the Manistique River; on the «Soo» and the Manistique and Lake Superior railroads, and on state and national highways, 107m. by rail SW. of Sault Sainte Marie. The Ann Arbor Railroad Company, in connection with its train service between Toledo and Manistique, operates a car ferry between Manistique and Frankfort, Mich. The surrounding region has lumber and limestone. The city's manufactures and industries include paper, fitted lumber, wooden novelties, pulpwood, and brooms. Manistique has a public library and a hospital; parks, playgrounds, and recreational centers. The public school system includes one high school. Musical interests are conserved by a choral club, and the town has its quota of social, civic, and service organizations. Manistique was incorporated as a city in 1901. The name is of Indian origin, meaning «Great Sandy Beach». Administration of local government is under the supervision of a city manager. The water supply system is under municipal ownership; the water is taken from Indian River. Pop. (1930) 5,198; (1940) 5,399.

**MANITOBA**, măn-î-tô-bă, Canada, occupies among the provinces of the Dominion a central position between the Atlantic and Pacific. It extends from the international boundary line on the south to the 60th parallel of north latitude on the north. It is bounded on the west by the province of Saskatchewan and on the east by Hudson Bay and the province of Ontario. It thus lies between the 49th and 60th parallels of north latitude and the 89th and 102d meridians of west longitude. The maximum length of the province north and south, 760.65 miles, the maximum breadth east and west, 495 miles. The present area is computed at 246,572 square miles, of which 26,789 are water. Pop. (1870) 11,963; (1881) 62,260; (1891) 152,506; (1901) 255,211; (1911) 461,630;

(1931) 700,139. Winnipeg, the capital (q.v.), has an estimated population (1931) of 218,785; Brandon, 17,082; Saint Boniface, 16,305; Portage la Prairie, 6,597. Population by religious denomination: Presbyterian, 55,720, Anglican, 128,385, Roman Catholic, 189,693; United Church, 176,240; with the Greek Church, Lutheran, Mennonite, Jewish and Baptist (in the order named) in smaller numbers.

**Boundaries.**—The district of which the junction of the Red and Assiniboine rivers—now the city of Winnipeg—has always been the nucleus since the period of settlement began in 1812 has been subject to no fewer than six changes of boundary. (a) The grant of Assiniboia made by the Hudson's Bay Company to Lord Selkirk in 1811 comprised 116,000 square miles from 52° 30' N. latitude (passing through Lake Winnipeg) on the north to the "height of land" between the northern and Mississippi watersheds on the south and from Lake Winnipeg and the Winnipeg River system on the east to about 102° W. longitude. The southern portion of this was found to be south of the international boundary after the Treaty of Ghent. (b) In 1841 the "Municipal District of Assiniboia" was declared to extend "in all directions 50 miles from the forks of the Red River and the Assiniboine." (c) In 1870 at the transfer of the Hudson's Bay territories to Canada, the new province of Manitoba extended from the international boundary to 50° 30' N. latitude and from 96° to 99° W. longitude. From its limited area and shape it was long known as "the postage stamp province." (d) In 1877 the eastern and western boundaries were slightly changed from meridians of longitude in order to conform to the system of land surveys in township, etc. (e) In 1881 the province was enlarged westward to the 30th range (nearly 101° 31' W. longitude), northward to the 12th base line (nearly 53° N. latitude) and eastward almost to 95° W. longitude, though this was fixed only after extended litigation with Ontario in 1884. The area was now 73,732 square miles. (f) In 1912 the province was enlarged north and northeast to the present boundaries, including a littoral of 500 miles on Hudson Bay and about 178,000 square miles of new territory. The northern boundary is now 60° N. latitude and Hudson Bay and the northeastern boundary runs from the northeast angle of the old province to the eastern end of Island Lake, and thence to the shores of Hudson Bay at the 89th meridian of W. longitude.

**Geographical Position and Climate.**—The importance of this district has been determined throughout its history largely by geographical considerations. For the French fur-trade from Canada and for the British trade from the same source after 1763, the Winnipeg, Red and Saskatchewan river systems formed the links between the Great Lakes and the Athabaska fur districts. Meanwhile from 1670, the date of the Hudson's Bay charter, to the transfer of the Hudson's Bay territories to Canada in 1870, the fur-trade by way of Hudson Bay came to follow the Hayes River route to Lake Winnipeg, thence the Red and Saskatchewan Rivers to the areas south and west. The intersection of these two channels occasioned the long and bitter conflict between the Hudson's Bay and North-West companies. With American expansion up the Missouri and Mississippi rivers

a third channel of communication was opened up from Saint Paul—at first by "Red River cart" or river-boat down the Red River, and eventually by rail in 1878. With the completion of the Canadian Pacific Railway, traffic reverted to the Canadian route by rail or the Great Lakes. It is seen therefore that the province lies at the headwaters of the three greatest waterways systems of the continent, the eastern by the Great Lakes and the Saint Lawrence, the southern by the Mississippi and the northern to Hudson Bay. This strategic importance was the occasion of Selkirk's choice of this district for colonization in 1811, for the movement in the United States during the sixties for the annexation of the Red River district to the American Union and for the more successful movement in Canada culminating in 1870 in the incorporation of the Hudson's Bay territories into the Canadian Confederation. Recent developments tend to confirm these considerations. The resources of water power, the fertility of the prairie and the maritime outlet at Churchill on Hudson Bay almost from the centre of the continent (see *Resources*) tend to unite the interests of the factory, the prairie and the sea at a point where the distinctive interests of East and West begin to diverge. On account of "its geographical position and its peculiar characteristics" Lord Dufferin in 1877 referred to the province of Manitoba as the "keystone of the arch." The position of Winnipeg (q.v.) as "the neck of the funnel" for traffic converging eastward and diverging westward has made that city the largest cash wheat market on the continent, with bank clearings normally equalled in Canada only by those of Montreal and Toronto.

The climate exhibits high variability of temperature, both daily and seasonal, together with a good average temperature for the year. The humidity, however, particularly in winter, is low. For the 20-year period, 1888-1907 at Winnipeg the mean daily range of temperature has varied from the maximum of 26.4° for May to the minimum of 18.1° for November. The mean annual range of temperature has been 68°, though the highest absolute range of temperature recorded has been 153°. The highest mean monthly temperature has been 77.6° in July, the lowest -13.4° in February. The annual rainfall has averaged 20.42 inches, but it is a remarkable fact that 10.9 inches of this have fallen during the four months May to August. The percentage of possible sunshine during the same period has averaged about 55.5 per cent—nearly double that of Edinburgh. The growth of vegetation is thus remarkably rapid. The climate is healthful and invigorating, though the winters are severe and the changes from winter to summer and vice-versa are unusually sudden.

**Geology and Topography.**—The geological formations encountered in Manitoba are Precambrian, Ordovician, Silurian, Devonian, Cretaceous, Pleistocene and Recent. Of these the early formations are found in ascending order from east to west, except that in the northeastern angle of the province adjacent to Hudson Bay there is a belt of Silurian with another of Ordovician adjoining it. The Precambrian area, comprising practically the whole district east and southeast of Lake Winnipeg, extends roughly in a northwesterly direction, including

nearly the whole of the central and northwestern part of the province. Outcroppings of Huronian and Keewatin are numerous (see *Resources*) though but limited areas have been as yet carefully prospected. The topography of this Archean region is very rugged with numerous lakes and wooded ridges of granites and gneisses largely denuded of soil by glacial action. The term "prairie province" long applied to Manitoba thus applies only to the southern and southwestern areas of the province, comprising less than two-fifths of the whole. The Ordovician, Silurian and Devonian belts, extending also in a general northwesterly and southeasterly direction, underlie the great lake districts of Lakes Winnipeg, Manitoba, Dauphin and Winnipegosis. Valuable limestone, gypsum, shale and sandstone deposits outcrop at many points over these areas (see *Resources*). The Cretaceous area directly overlying the Devonian in the southwestern district of the province exhibits soft shales and basal sandstone. The escarpment which forms the eastern edge of this area extends from the Pembina Mountains, near the international boundary, to the Pasquia Hills just south of the Saskatchewan River. The Pleistocene deposits of clay over the older formations, particularly in the south, are due, like the highly composite nature of the surface soils of this area, to the action of the great glacial lakes Agassiz, Souris and Saskatchewan—probably 110,000 square miles in area (Upham) of which considerably more than three-quarters lay within the present boundaries of the province. The original outlet of this great lake, the receding shores of which are marked by no fewer than 28 beaches (Upham), was toward the south until the melting of the ice-barriers opened up the natural outlet into Hudson Bay. To the rich composite deposits of surface soils during this process, particularly where the early recession of Lake Agassiz permitted adequate "weathering" of surface molds, the fertility of southern Manitoba may largely be attributed, though more recent alluvial deposits of both clay and humus are traceable in the Red River Valley. In the northern areas of the Lake Agassiz district the drainage is still very defective and the "weathering" of the soil correspondingly incomplete.

Perhaps the most striking topographical feature of the province is the surviving lake area of Lakes Winnipeg, Manitoba, Dauphin and Winnipegosis. Lake Winnipeg particularly (approximately 9,500 square miles) is the repository of the Winnipeg River system from the southeast, the Red and Assiniboine River systems from the south and the Saskatchewan River system together with the Winnipegosis, Manitoba and Dauphin Lakes system from the west. The outlet is by Nelson River into Hudson Bay. The Churchill River flowing also into Hudson Bay drains a largely unexplored area in the northwestern part of the province. This variety of surface features is found with a very limited range of altitudes. The highest hills are found in the escarpments of the Cretaceous area—Pembina Mountains, Tiger Hills, Riding Mountain, Duck Mountain (2,600 feet) and the Pasquia Hills.

**Fauna and Flora.**—The wild life was at one time prolific and is still justly famous, though game is now carefully conserved. The

fur-trade was the first historic industry of the country. The buffalo, once found in almost incredible numbers on the prairie, is now extinct in its wild state, but the wapiti or elk, the antelope and the moose are still plentiful. Among fur-bearing animals are the otter, beaver, mink, fisher, skunk, martin, muskrat, wolf ("timber" and "prairie"), bear, fox, lynx, ermine and wolverine, with the rabbit in great abundance as the basis of carnivorous life. Bird life is plentiful, including prairie chicken, wild duck, mallard duck, wild goose and partridge among game birds, and more than 250 other species of wild birds. Among fish the whitefish, pickerel, pike, sturgeon, tullabee and goldeye have considerable commercial value.

The flora of the province includes tamarac, spruce (white and black or "bog"), jack pine, trembling poplar and balsam fir over vast areas of the Precambrian district, with less plentiful growths of oak, elm, cottonwood and "Manitoba maple" in southern districts of the province. Small fruits such as strawberry, raspberry, blueberry, cranberry ("high-bush" and "low-bush"), saskatoon berries, the wild plum, cherry and black currant are indigenous. Wild flowering plants (more than 750 species of *Phanerogama*) are remarkable during the summer months for their profusion of variety and color.

**History and Political Development.**—Manitoba was admitted as a province to the Canadian Confederation only in 1870, but there is a sense in which the Hudson Bay district is the oldest continuously British territory upon the continent. The charter granted to the Hudson's Bay Company in 1670 formed the basis of the British claims which came to embrace practically the whole watershed into Hudson Bay. French counterclaims on behalf of Canada, however, were advanced and in many cases vindicated by force until 1713 when the district became British by the Treaty of Utrecht. Provision was made for a commission to determine the boundaries between Canada and the Hudson's Bay territories, but no settlement was ever reached. After Canada also became British in 1763, traders from Montreal under the name of the North-West Company sought to revive the validity of the old French claims in order to vindicate their refusal to recognize the Hudson's Bay charter. This conflict in trade was accentuated rather than assuaged when the fifth Earl of Selkirk obtained control of the Hudson's Bay Company in 1811 in order to carry out his third project of colonization from the Scottish highlands. The company granted him for the purpose the district of Assiniboia, comprising 116,000 square miles and controlling the most important strategic waterways of the west. The first band of settlers reached "the Forks" of the Red and Assiniboine rivers, the site of the city of Winnipeg, on 30 Aug. 1812. From the first, however, the North-West Company had determined to disperse or destroy the settlement, and faulty management on the part of the officials of the colony facilitated their purpose. In 1815, 134 of the settlers were induced to leave the Red River Settlement for Upper Canada. The rest were driven off toward Hudson Bay. Reinforcements re-established the colony in the autumn, but in the following spring Governor Semple and 20 of his men were killed at Seven Oaks, near the settle-

ment, by an armed band of "half-breeds" or Métis in the employ of the North-West Company. This act of violence at last aroused the British government from its policy of "salutary neglect," but Selkirk, who was on his way from Canada to the settlement when he received the news of Seven Oaks, made the fatal mistake of turning aside to retaliate upon the North-West partners at Fort William. The rest of his life was filled with bootless litigation; for though he visited the settlement in 1817 and spent both health and fortune upon it, he died in 1820 without vindicating his cause. Meanwhile the British government had brought pressure to bear in order to bury the blunders of the past by a coalition between the rival companies. This was effected in 1821 under the name of the Hudson's Bay Company, and the old "North-westerns" became the staunchest exponents of all the rights of the charter.

The Red River Settlement, meanwhile, had suffered a series of natural as well as deliberate calamities. A plague of grasshoppers in 1818 and finally the great flood of 1826 threatened, as Governor Simpson wrote, to prove "an extinguisher to the hope of Red River ever retaining the name of a settlement." The colony was firmly re-established, however, by a succession of prolific harvests and the profusion of natural resources for primitive settlement (Sheriff Ross records the slaughter of 2,500 buffalo in a single "hunt," and no fewer than 16,000 whitefish were taken by the settlers on their retreat after Seven Oaks). By 1830 the Red River Settlement bore every appearance of "peace and plenty." In 1834 it reverted by purchase from the Selkirk family, in whose possession it had remained after the fifth Earl of Selkirk's death, to the direct control of the Hudson's Bay Company.

After the coalition in 1821 the company's trade in Rupert's Land, as the "chartered" territory came to be called, had responded rapidly to the enterprising management of Gov George Simpson. By license issued successively in 1821 and 1838, for periods of 21 years, the company was granted a monopoly of the fur-trade for the whole district westward to the Pacific. A new Fort Garry with walls and bastions of stone was built at "the Forks" (1836-38) but the Red River Settlement remained for more than a generation a primitive and secluded community. The primitive "council" at the settlement gave place after 1834 to the regularly constituted "Council of Assiniboia." After 1841 the "Municipal District of Assiniboia" came to include only the area within a radius of 50 miles from "the Forks" of the Red River and the Assiniboine. Colonization was overshadowed by the opulence and mystery of the fur-trade, and though the company can scarcely be charged with neglect, Selkirk's original plan of affording a stable and ready market for agricultural produce in the expanding trade of the company was only partially realized. With the advent of the American trader from the south and the enterprise of the "free-traders" within the settlement itself, even the company's cherished monopoly of the fur-trade was subject to challenge.

The original Scottish settlers, reinforced by many of the retiring servants of the company, formed a thrifty and contented community. The French Métis, however, though served by

a devoted Roman Catholic priesthood, formed a much less stable element of the population. Accustomed to live by the buffalo chase or by fishing, they were readily susceptible to influences with which the primitive patriarchal authority of the company soon proved powerless to cope. The process of "smoothing" the malcontents by adroit management postponed the conflict without averting it. In 1849 the primitive judiciary at the settlement was openly intimidated into acquitting one of the "free-traders" in furs. Thereafter the monopoly of the fur-trade was openly contravened. The Red River Settlement began to attract attention in Canada and in the United States. In 1857 the Committee of the British House of Commons drew up its famous 'Report' on the Hudson's Bay Company, and it became apparent that Canada had the ear of the British government in the dream of expansion to the Pacific.

From 1857 to the transfer of the Hudson's Bay territories to Canada in 1870, the development of the Red River Settlement was rapid and at times turbulent. During 1856 no fewer than 500 Red River carts with produce and furs plied to the American outposts. Three years later two Canadian journalists brought in a printing-press, and the *Nor-Westerner* advocated insistently a union with Canada. American opinion was scarcely less pronounced; as late as 1869 Governor McTavish of the Hudson's Bay Company regarded annexation to the United States as the "manifest destiny" of the Red River district. The Canadian party, however, though enterprising and aggressive, bitterly antagonized the company and many of the older inhabitants. The improvident and credulous French Métis, particularly, were suspicious and resentful. Generous "reserves" of land and scrupulous tact on the part of Canadian officials might have allayed their fears of the impending change. In 1869 the purchase of the Hudson's Bay territories by Canada for £300,000 (\$1,500,000) was arranged under the auspices of the British government. The company had changed hands in 1863, and the resident officials in Rupert's Land could not be expected to be enthusiastic either to the new directorate or to Canada. The Scottish settlers readily acquiesced in the change, but the fears of the French Métis were fomented by a few agitators into open insurrection against the transfer.

The Dominion of Canada had been formed only in 1867, and the Riel Insurrection at Red River reflected largely the attitude of Quebec in the Canadian Confederation. The establishment of a smaller Quebec on the banks of the Red River had long been the policy of the French clergy. The prospect of union with Canada without guarantees for their race, language and religious control over the Métis occasioned the bitterest resentment. During Archbishop's Tache's absence from Red River a rising of Métis led by Louis Riel received the support and for a time submitted largely to the guidance of French clerical influence in touch with Canadian politics. Riel seized Fort Garry and dominated the settlement for 10 months until the arrival of a military expedition under Colonel Wolseley on 24 Aug. 1870. "Land scrip" was issued for the Métis, and clauses intended to safeguard the French language and separate schools found their way into the Manitoba Act by which the province was formally



manipulated into the Dominion but the victory of the Red and the "monopoly clause" and particularly the "land-lock" clause of the Canadian Pacific Railway Act of 1871, which was passed on March 4, 1871, dominated provincial and even federal politics for many years. The rule was regarded as a special privilege for the frontier province, 30 years later was due in no small measure to resentment against the methods of the federal government in dealing with the Red Insurrection. The total population of the new province was less than 12,000, of whom but 1,500 were white. The first provincial government consisted of a legislative assembly of 24 members (with an executive council of five) and a legislative council (abolished in 1876) of seven members. The new province inherited from the past a series of problems which kept public feeling at high tension. Cross-currents of race and religion—a Fenian raid in 1871, the "amnesty question" and the trial of Lépine for the death of Scott—complicated for many years the work of provincial government. The chronic poverty, moreover, of the "postage stamp province" reduced administration after administration to a degree of economy bordering upon parsimony. The agitation for "better terms" and "provincial rights" became increasingly insistent with the responsibilities attendant upon rapid immigration. Within a decade the population grew from 12,000 to 60,000. The railway from Saint Paul was completed in 1878, with the Canadian Pacific Railway in prospect east and west the province began in 1879 to experience a "boom" which added \$5,000,000 in buildings and doubled the population of Winnipeg within a single year. After 1882 the return to normal conditions was slow and difficult. Under the Norquay administration particularly (1878-87) the provincial government was found to be struggling against intolerable disabilities. The control of natural resources had been retained by the federal government. The provincial treasury was dependent chiefly upon meager grants from the Dominion under the form of direct allowance for government, per capita allowance for institutions, "debt allowance" for Dominion indebtedness in 1870, subsidy in lieu of public lands, etc. The national importance of the Canadian Pacific Railway was held to justify "a monopoly clause" against the granting of provincial charters to competing railways. The grant of one-twentieth of settled land to the Hudson Bay Company by the terms of the transfer in 1869 and the generous grants of land to the Canadian Pacific Railroad had created a "land-lock" which interfered seriously with settlement. An increase of federal subsidy to \$227,000 in 1882 and the extension of the boundaries proved quite inadequate concessions. The Canadian Pacific Railroad was completed in 1885 but the province proceeded to contest the "monopoly clause" by undertaking the Red River Valley Railway as a government work. The new Greenway administration (1888-99) forced the Dominion at last to repeal the objectionable "monopoly clause." This first substantial victory for "provincial rights" was regarded as "the advent of a new era."

"The Manitoba School Question" which dominated provincial politics and eventually even federal politics in 1896 is dealt with elsewhere. The Roblin administration, from 1900, was marked by few fundamental political issues.

In 1908 the government announced "the first complete system of government-owned telephones on the continent." Four years later it was announced that there were nearly 4,000 miles of completed railway lines within the province, of which about 1,600 miles had been built in seven years. Provincial guarantees of railway bonds (\$25,000,000) have since been practically abrogated by the Dominion in taking over the Canadian Northern Railway. In 1912, almost exactly a century after the beginning of settlement in Assiniboia, the boundaries of the province were extended northward over a new district estimated at 106,304,000 acres, with a littoral of 500 miles on Hudson Bay (see *Boundaries*). The sum of \$2,178,648 was granted for arrears of claims by the province, and the total federal subsidies were increased from less than \$840,000 in 1911 to nearly \$1,350,000 pending the control of the natural resources by the province. The Norris administration which was strongly supported at the polls after the resignation of the Roblin government in 1915 carried forward a very comprehensive policy of education. The Hudson Bay Railway for which \$33,448,655 had been expended by the Dominion up to 1936 is now in operation from The Pas to Port Nelson—510.07 miles, but is incurring large deficits. For the province of Manitoba, the prospect of a shorter water route to the British market, for at least four months of the year, than that from New York, marks a curious recurrence to historic conditions. Not less important will be the prospect of opening up—eventually under provincial control—the natural resources of the vast northern areas of the province. The chief interests of Manitoba, however, remain agricultural. By far the most remarkable development of recent years in western Canada has been agrarian organization—the Manitoba Grain Growers' Association with similar organizations in other western provinces—for co-operative and educational purposes. The United Grain Growers, Limited (an analogous commercial organization formed in 1917 by the union of the Grain Growers' Grain Company and the Alberta Co-operative Elevator Company), with headquarters in Winnipeg, has achieved by far the most signal success in Canada. In 1926 the Manitoba Co-operative League was organized to link together the societies of the province.

**Natural Resources, Manufactures and Transportation.**—The following official statistics will indicate the relative returns from natural resources (as tabulated for 1936 in the *Canada Year Book*), the estimated value of manufactures, etc.

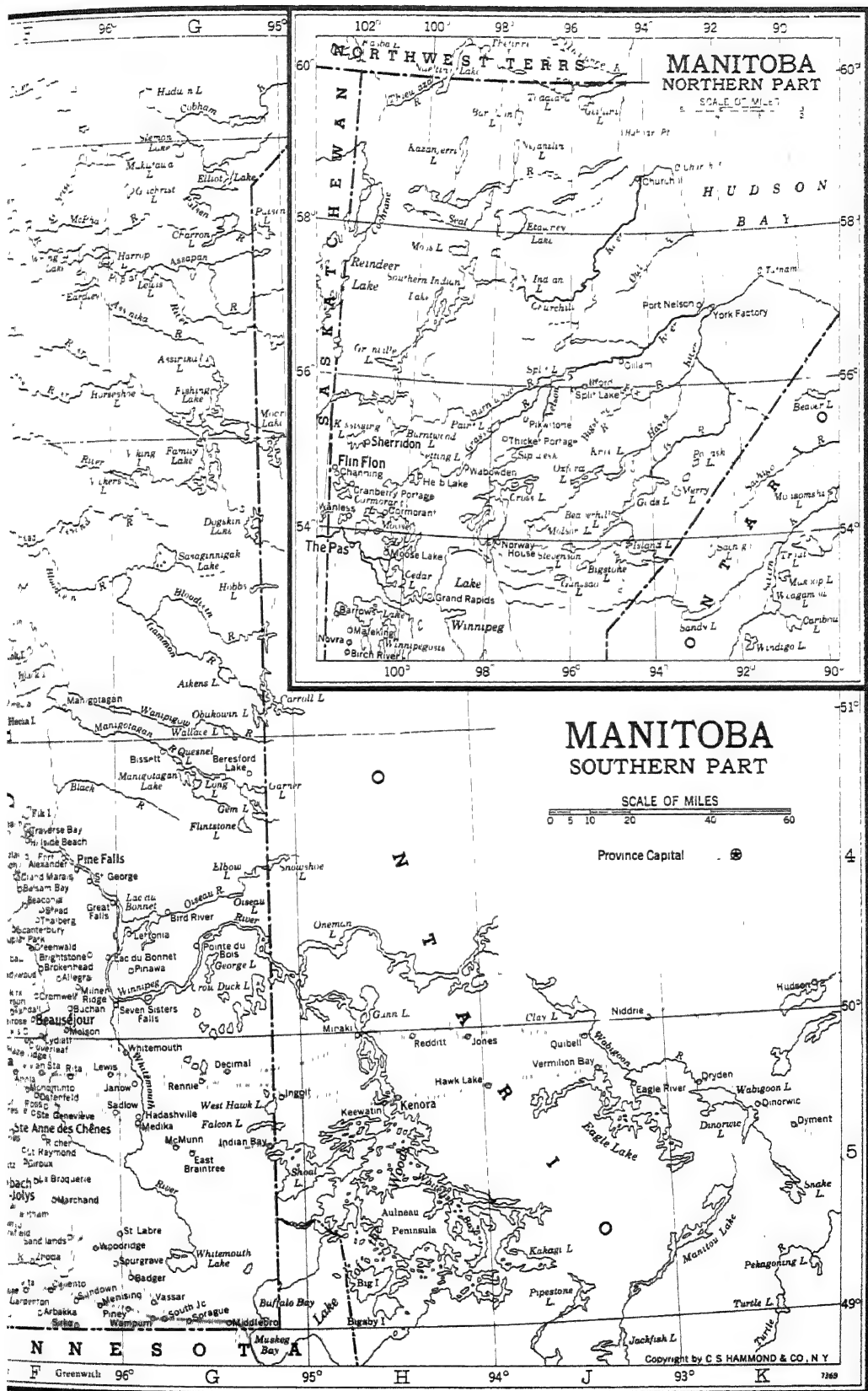
In 1936 agriculture made the largest proportionate contribution to the net value of production in Manitoba. Agriculture led at 39.76 per cent or \$48,858,000 with manufactures second at 31.58 per cent or \$38,804,000. Third position in Manitoba in 1936 was held by mining at 7.62 per cent or \$9,366,000. The gross value of agricultural production in the province was, however, much greater than the above figure would indicate. Field crops had a value of \$50,660,000 in 1936; farm animals produced a total of \$9,068,000; wool was valued at \$132,000; dairy products were valued at \$11,631,000; fruits and vegetables had a value of \$827,000; poultry and eggs a value of \$3,629,000; fur

# MANITOBA

Total Population 729,744

Broomhill, (B5)	404	Brown (D5)		Duck River (B3)		Grande Prairie (E5)		Jaroslav (F4)	
Brunkild, (E5)	109	Bruxelles, (C5)	64	Dufresne (F5)		Grand Marais (F4)		Justice, (C4)	48
Buchan, (F4)	218	Bunclody, (B5)	131	Dunrea, (C5)	110	Grand Rapids (H3)		Kaluda, (D5)	
Butler Station, (A5)	345	Caliento, (F5)		Durhan, (A3)	220	Grand View, (B3)	696	Kan, (E5)	
Caliento, (F5)	114	Camperville, (B2)	53	East Bay (C3)	198	Grass River (D4)		Katime (B4)	
Camperville, (B2)	297	Camp Morton, (F4)	23	East Braintree, (G5)		Graysville, (D5)	100	Kelroe, (D4)	42
Camperville, (B2)	467	Carberry, (C5)	931	Ebor, (A5)	57	Greet Falls, (F4)	108	Kelwood, (C4)	211
Camperville, (B2)	290	Cardale, (B4)	81	Eddystone, (C3)		Green Ridge (F5)		Kemnay, (B5)	60
Camperville, (B2)	159	Cardinal, (D5)	103	Eden (C4)	141	Green Valley, (F4)		Kenton, (B5)	128
Camperville, (B2)	106	Carey, (E5)	50	Edwin, (D5)	100	Gretna, (E5)	142	Kerville, (A3)	117
Camperville, (B2)	342	Carlowrie, (E5)		Ekhart, (E4)		Griswold, (B5)	285	Keyes, (C4)	40
Camperville, (B2)	15	Carman, (D5)	1,455	Elgin, (B5)	344	Gross Isle (E4)	44	Killarney, (C5)	1,051
Camperville, (B2)	380	Carnegie, (B5)		Elk Ranch (A5)	126	Grunthal, (F5)	150	Kirkella, (A4)	55
Camperville, (B2)	276	Carroll, (B5)	92	Elk Creek (E5)	557	Guntton, (E4)	163	Kirkella, (F5)	
Camperville, (B2)	105	Cartwright, (C5)	412	Elm Grove, (F5)	378	Gypsumville, (D3)	166	Komar, (E4)	129
Camperville, (B2)	500	Castle Point, (C5)		Elva (A5)	89	Hagashville, (G5)		Kovstak, (E3)	
Camperville, (B2)	208	Channing, (H3)		Emerson, (E5)	854	Halbstadt, (E5)	12	Kulish, (B3)	
Camperville, (B2)	111	Chater, (C5)	35	Endcliffe (A4)	305	Halcyon, (B3)		La Broquerie (F5)	150
Camperville, (B2)	148	Chatfield, (E4)	130	Erikdale, (D4)		Hallboro, (C4)		Lac du Bonnet (G4)	560
Camperville, (B2)		Chortitz, (F5)	115	Erinview (E4)	356	Hallboro, (C4)	524	Ladywood, (F4)	33
Camperville, (B2)		Churchill, (K2)	330	Ethelbert, (B3)		Harcus, (D4)		Lake Francis, (E4)	
Camperville, (B2)		Claudeboye, (E4)	120	Ewart, (A5)	59	Harding, (B5)	63	Landseer, (C5)	
Camperville, (B2)		Claudeboye, (E4)	120	Fairfax, (B5)	27	Hargrave, (A5)	55	Langruth, (D4)	224
Camperville, (B2)		Claudeboye, (E4)	120	Fairford (D3)	161	Hartington, (A2)		La Riviere, (D5)	275
Camperville, (B2)		Claudeboye, (E4)	120	Fannystelle (E5)		Harmsworth, (B5)		La Roche, (F5)	
Camperville, (B2)		Claudeboye, (E4)	120	Faulkner, (D3)	17	Harperville, (E4)		La Salle, (E5)	78
Camperville, (B2)		Claudeboye, (E4)	120	Findlay, (B5)		Harrowby, (A4)	40	Lauder, (E5)	167
Camperville, (B2)		Claudeboye, (E4)	120	Firdale, (C5)		Harte Station, (C4)		Launier, (C4)	171
Camperville, (B2)		Claudeboye, (E4)	120	Fisher Branch (E3)	400	Hartney, (B5)	478	Lavonia, (B4)	
Camperville, (B2)		Claudeboye, (E4)	120	Fisherton, (E3)		Harwill, (E3)		Layland, (D5)	
Camperville, (B2)		Claudeboye, (E4)	120	Fishing River (B3)		Haskett, (E5)	61	Leary, (D5)	
Camperville, (B2)		Claudeboye, (E4)	120	Flin Flon (H3)	5,555	Hayfield, (B5)	70	Ledwyn, (E4)	
Camperville, (B2)		Claudeboye, (E4)	120	Foley, (E4)		Hayland, (D3)		Lena, (C5)	
Camperville, (B2)		Claudeboye, (E4)	120	Fork River, (B3)	182	Haywood, (D5)	100	Lennard, (A3)	
Camperville, (B2)		Claudeboye, (E4)	120	Forrest Station, (C5)	50	Hazelridge (F5)	83	Lenore, (B5)	145
Camperville, (B2)		Claudeboye, (E4)	120	Fort Alexander, (F4)		Headingly, (E5)	500	Lenswood, (B2)	
Camperville, (B2)		Claudeboye, (E4)	120	Fort Garry, (E5)	3,458	Heaslip Station, (C5)		Letellier, (E5)	225
Camperville, (B2)		Claudeboye, (E4)	120	Fortier, (E5)	700	Hecla, (F3)		Lettonia, (G4)	
Camperville, (B2)		Claudeboye, (E4)	120	Fort Whyte, (E5)		Helston, (C4)		Lewis, (H3)	
Camperville, (B2)		Claudeboye, (E4)	120	Foxwarren, (A4)	219	Herb Lake, (H3)		Lilau, (F4)	149
Camperville, (B2)		Claudeboye, (E4)	120	Franklin, (C4)	160	High Bluff, (D4)	125	Lillestve, (E4)	
Camperville, (B2)		Claudeboye, (E4)	120	Fraserwood, (E4)	113	Hilbre, (D3)		Lily Bay, (D4)	
Camperville, (B2)		Claudeboye, (E4)	120	Gardenton, (F5)	265	Hillside Beach, (F4)		Little Bullhead, (F3)	
Camperville, (B2)		Claudeboye, (E4)	120	Garland, (B3)		Hilltop, (C4)		Loch Monar, (E4)	
Camperville, (B2)		Claudeboye, (E4)	120	Garson Quarry, (F4)	240	Hilton, (C5)		Lockport, (E4)	110
Camperville, (B2)		Claudeboye, (E4)	120	Genthon (F5)		Hnausa, (F4)		Lonely Lake, (D3)	
Camperville, (B2)		Claudeboye, (E4)	120	Geyser, (E4)		Hodgson, (E3)	150	Lorette, (F5)	
Camperville, (B2)		Claudeboye, (E4)	120	Gilbert Plains, (B3)	804	Holland, (D5)	388	Lundar, (D4)	540
Camperville, (B2)		Claudeboye, (E4)	120	Gillam, (K2)	85	Holmfild, (C5)	166	Lydiatt, (F5)	65
Camperville, (B2)		Claudeboye, (E4)	120	Gimli, (F4)	853	Homebrook, (C3)		Lyleton, (A5)	134
Camperville, (B2)		Claudeboye, (E4)	120	Giroux, (F5)	106	Homewood, (E5)	75	McAuley, (A4)	139
Camperville, (B2)		Claudeboye, (E4)	120	Gladstone, (D5)	669	Horod, (B4)		McConnell, (B4)	57
Camperville, (B2)		Claudeboye, (E4)	120	Glenboro, (C5)	571	Horseshoe Bay		McCreary, (C4)	400
Camperville, (B2)		Claudeboye, (E4)	120	Glencairn, (C4)		(Whytecliff), (K3)		Macdonald, (D4)	54
Camperville, (B2)		Claudeboye, (E4)	120	Glenella, (C4)	190	Horton, (B5)		Macgregor, (D5)	520
Camperville, (B2)		Claudeboye, (E4)	120	Glen Elmo, (B4)		Howden, (E5)		McMunn, (G5)	
Camperville, (B2)		Claudeboye, (E4)	120	Glenhope, (C3)		Husavick, (F4)		MacRoss, (D4)	
Camperville, (B2)		Claudeboye, (E4)	120	Glenlea, (E5)		Ideal, (E4)		McTavish, (E5)	27
Camperville, (B2)		Claudeboye, (E4)	120	Glenora, (C5)	32	Île de Chenes, (F5)		Maefking, (H3)	108
Camperville, (B2)		Claudeboye, (E4)	120	Glen Souris, (C5)		Ilford, (J2)	67	Magnet, (C3)	62
Camperville, (B2)		Claudeboye, (E4)	120	Gonor, (F4)		Indian Bay, (G5)		Makaroff, (A3)	23
Camperville, (B2)		Claudeboye, (E4)	120	Goodlands, (B5)	115	Indian Springs, (D5)		Makinak, (C4)	124
Camperville, (B2)		Claudeboye, (E4)	120	Grahamdale, (D3)		Ingelow, (C5)		Malonton, (E4)	51
Camperville, (B2)		Claudeboye, (E4)	120	Grand Beach, (F4)		Inglis, (A4)	205	Manigotagan, (F3)	
Camperville, (B2)		Claudeboye, (E4)	120	Grande Clairiere, (B5)		Inwood, (E4)	84	Manitou, (D5)	665
Camperville, (B2)		Claudeboye, (E4)	120			Isabella, (B4)	153	Manson, (A4)	57
Camperville, (B2)		Claudeboye, (E4)	120			Janow, (G5)	145	Marchand, (F5)	86

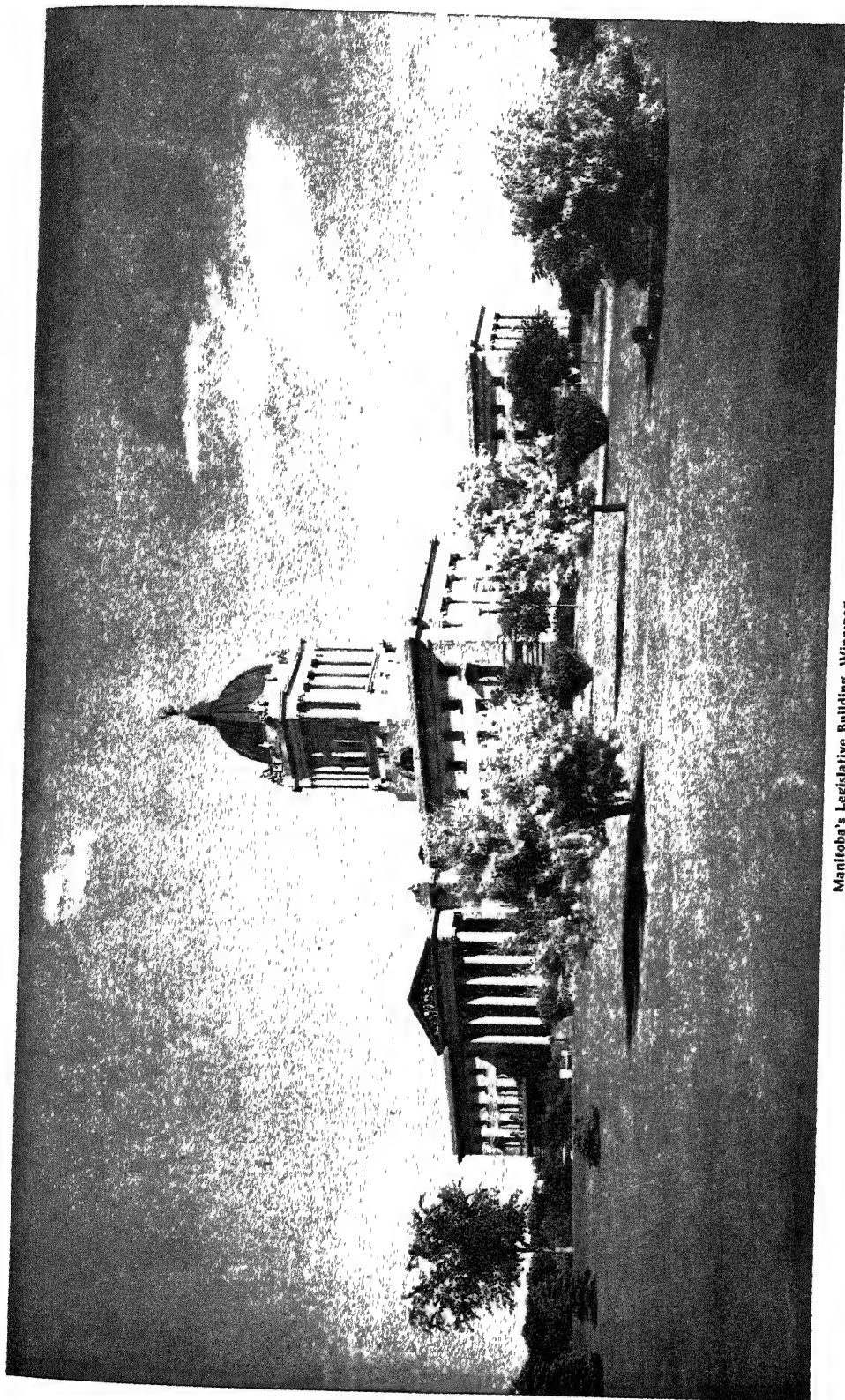








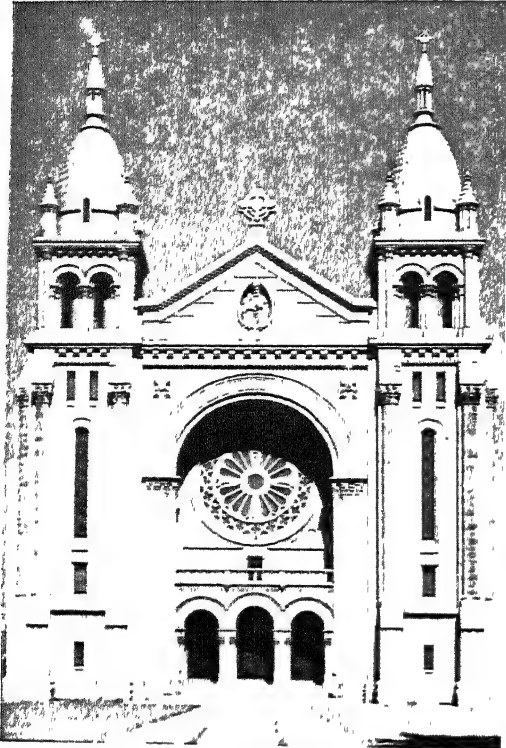
# MANITOBA



Manitoba's Legislative Building, Winnipeg.

Courtesy The Travel and Publicity Bureau, Winnipeg

# MANITOBA



Courtesy The Travel and Publicity Bureau, Winnipeg  
St. Boniface Cathedral.



Boating on Clear Lake in Riding Mountain National Park.



Courtesy The Travel and Publicity Bureau, Winnipeg  
Four hundred miles north of the International Boundary, the \$50,000,000 mining plant of the Hudson Bay Mining and Smelting Company produces copper, zinc, gold, silver and cadmium, and supports a vigorous town of 8,000 people.

## MANITOBA

farming a value of \$467,000; and honey, \$569,000. This gives a total of \$77,066,000. The same year the current value of farm capital in the province was given as follows. Land and buildings, \$224,848,000, implements and machinery, \$40,137,000, live stock, \$45,885,000, a total of \$310,870,000. The acreage, yield and values of the principal field crops in 1937 was as follows: Spring wheat, 2,872,000 acres; 48,000,000 bushels valued at \$46,560,000; oats, 1,410,000 acres, 43,075,000 bushels valued at \$16,799,000, barley, 1,393,000 acres, 34,800,000 bushels, valued at \$16,356,000; all rye, 135,200 acres, 2,460,000 bushels valued at \$1,796,000; peas, 2,600 acres, 44,000 bushels valued at \$66,000; buckwheat, 5,800 acres, 103,000 bushels valued at \$85,000, mixed grains, 23,800 acres, 626,000 bushels valued at \$275,000, flaxseed, 38,300 acres, 370,000 bushels valued at \$559,000; potatoes, 30,900 acres, 2,481,000 hundredweights valued at \$1,687,000; turnips, 5,500 acres, 723,000 hundredweights valued at \$376,000; hay and clover, 410,000 acres, 788,000 tons valued at \$4,444,000, alfalfa, 30,000 acres, 71,000 tons valued at \$552,000; fodder corn, 64,500 acres, 275,000 tons valued at \$1,375,000. The estimated area under pasture in 1937 was 245,000 acres. In the same year, 270,471 acres of provincial lands were under grazing leases. The numbers and values of farm live stock in the province in 1937 were as follows: Horses, 324,700 valued at \$20,781,000, milch cows, 390,400 valued at \$12,493,000; other cattle, 456,600 valued at \$10,958,000; sheep, 216,200 valued at \$1,096,000; swine, 228,900 valued at \$2,747,000, making a total value of \$48,075,000. There were in addition 4,333,000 head of poultry valued at \$3,064,000. The mineral production of 1937 had a value of \$16,055,743. Copper production has increased in late years, the 1936 output being 29,853,220 pounds valued at \$2,829,190. In the same year the province produced 139,273 fine ounces of gold valued at \$2,879,028; 791,489 fine ounces of silver valued at \$357,175, and 36,744,951 pounds of zinc valued at \$1,218,095. The province reported 1,011 manufacturing establishments in 1936, capitalized at \$118,515,841, with 22,507 wage earners, paying \$24,490,299 in wages, \$74,374,078 for materials and producing goods with an aggregate value of \$122,050,502. The leading industries are: slaughtering and meat-packing, railway rolling stock, butter and cheese, flour and feed, central electric stations, printing and publishing, bread and other bakery products, malt and malt products, bags, cotton and jute, clothing, men's furnishings, etc.

**Government and Judiciary.**—The provincial government consists of a legislative assembly of 55 members with an executive council of seven members directly responsible to the legislature. A lieutenant-governor is appointed by the Dominion for a term of five years. The legislature for which both men and women are eligible is elected for a period of five years unless dissolved in conformity with principles of British parliamentary procedure. The province has a representation of 17 members in the Dominion House of Commons, based *pro rata*, like that of other Canadian provinces, upon the fixed number of 65 from the province of Quebec.

The judiciary comprises (a) the Court of King's Bench, consisting of a chief justice and five puisne judges with original civil and criminal jurisdiction, and until 1906 with jurisdic-

tion also, when sitting *en banc*, as the ultimate court of appeal. (b) In 1896 a Court of Appeals was established, consisting of a chief justice and four (originally three) puisne judges with appellate jurisdiction from all courts of the province. (c) County Courts in the various judicial districts of the province with jurisdiction over certain civil (in general up to \$500) and criminal cases. (d) Surrogate Courts, one in each judicial district of the province. The County Court judge is officio judge of the Surrogate Court, with jurisdiction over administrations and probate. Minor courts in the province are presided over by stipendiary magistrates and justices of peace.

**Education.**—Manitoba possesses, under control of a Minister of Education, assisted by an Advisory Council, a comprehensive system of non-sectarian public education from primary school to the provincial university including among other progressive features compulsory education, consolidated school residences for teachers in outlying districts, the province Education is, however, really centrally controlled, as it is in all of the other provinces, and is supported by local taxation and by government grants. In 1937 there were 4,429 teachers and 142,482 pupils in the 4,290 public schoolrooms. There were also 127 intermediate schools, having one room for high school work, 42 high schools; 15 junior high schools; 17 collegiate departments; and 27 collegiate institutes. The province has a considerable number of agricultural, commercial, industrial, and technical schools, and schools for Indians.

The University of Manitoba was established by an act of the Manitoba Legislature in 1887 for the purpose of raising the standard of higher education in the Province and of enabling all denominations and classes to obtain academic degrees. By an amendatory act of 1917, the government, conduct, management and control of the university is vested in a board of governors of nine members, appointed by the lieutenant-governor-in-council. Affiliated colleges include St. Boniface College at St. Boniface (R. C.); St. John's College at Winnipeg (Church of England); Manitoba College at Wesley College, both at Winnipeg (United Church colleges which retain separate charters but have joint executive committee, joint faculty, etc.); Manitoba Law School at Winnipeg; St. Paul's College at Winnipeg (R. C.).

**Bibliography.**—Documentary authorities ('Selkirk Papers' (manuscripts), (Dominion Archives, Ottawa); 'Papers Relating to the Red River Settlement' (1819); 'Report of Select Committee' (1857); 'Recent Disturbance (1870)'; 'The Canadian North-West,' ed. Oliver (Dominion Archives, 1915). Consult also 'Canada and Its Provinces' (Vols. XIX and XX); Ross, 'Red River Settlement' (1856); Hargrave, 'Red River'; Martin, Chester, 'Selkirk's Work in Canada'; Begg, 'History of the North-West'; Bryce, 'Manitoba'; Schofield, 'Story of Manitoba'; DeLury, 'Mineral Prospects in Southeastern Manitoba, Rice Lake, Maskwa River and Boundary Districts' (1920); Kitto, F. H., 'Manitoba: Its Development and Opportunities' (Ottawa); Manitoba Government Liquor Control Commission (annual reports); Mackintosh, W. A., et al., 'Economic Problems of Prairie Provinces' (Toronto 1936).

**MANITOBA**, Canada, a lake situated in Manitoba province, to which it gives its name, about 50 miles southwest of Lake Winnipeg. It is of irregular shape, 110 miles long, with a maximum breadth of 29 miles, a shore-line of 535 miles, an area of 1,171 square miles and an average depth of 12 feet. It is 810 feet above sea-level, and 40 feet higher than Lake Winnipeg, into which it drains through the Saskatchewan or Dauphin River.

**MANITOBA, University of.** The Canadian province of Manitoba, which was formed out of Rupert's Land in 1870, was the outgrowth of the Red River Settlement founded by Lord Selkirk and his immigrants under Hudson's Bay Company auspices in 1812-15. The Scottish settlers were joined from time to time by the Métis, the descendants of French-Canadian voyageurs, who married Indian women, and also by the children of company officers and Orkney employees of the Hudson's Bay Company who had taken Indian wives. This mixed community in 1870 numbered 12,000 souls.

To the Métis came from Lower Canada Priest (afterward Bishop) Provencher, who in 1818 established a school, which grew in later times into Saint Boniface Roman Catholic College. The English-speaking half-breeds belonging to the Church of England were educated at Saint John's College, which was reorganized in 1866 by Bishop (afterward Archbishop) Machray. Just as the new province of Manitoba was forming there was established during the year 1871 in Kildonan, near Winnipeg, among the Selkirk Scottish settlers, a Presbyterian college, known since as Manitoba College. This last-named college was in 1874 removed to Winnipeg. These three denominational colleges were all in or near the new city. In 1875 an important meeting was held in the courthouse, Winnipeg, by Manitoba College, in which a union of the three colleges under a provincial university was suggested. Governor Morris favored this plan, and in 1877 an act was passed in the legislature of Manitoba establishing the University of Manitoba, to which the three colleges, Saint Boniface, Saint John's and Manitoba, were affiliated. The university was at first to be only an examining body, the teaching being done entirely by the colleges.

The new university was unique. It brought together the largest religious bodies of the province and kept up the standard of education, it being the only source of degrees. Its first examinations took place in May 1878, when seven candidates presented themselves. In 1878 application was made to the Dominion government for a land grant, and at length, in 1885, under the "Better Terms Settlement" of that year, 150,000 acres of good agricultural wild land was given to the university. This endowment is now valued at \$1,600,000. In 1883 a native of Red River Settlement living in England, Mr. A. K. Isbister, who like many others was attracted by the broad and cosmopolitan spirit of the young university, bequeathed \$83,000 as a scholarship fund to the university.

In 1882 the Manitoba Medical College was founded and became affiliated to the university. In 1888 a new member of the sisterhood of Colleges—Wesley College of the Methodist Church—was affiliated to the university; a college of pharmacy was affiliated in 1902.

In 1893 the University Act was changed to allow teaching to be done by the university in natural science, mathematics and modern languages, the affiliated colleges taking up the other departments. In 1898 a site of seven acres in the heart of Winnipeg, valued at \$120,000, was given by the Dominion government to the university, and in 1900 the first building was erected.

In recent years on the erection of new government buildings, two commodious law buildings contiguous to the university grounds have been transferred to the university for its increasing needs. In 1903 the University Act was changed to permit teaching in the classics, natural science, mathematics and modern languages, engineering and business training, still depending on the denominational colleges for teaching in the other arts subjects. Degrees are now given by the university in arts, law, medicine, science, engineering, pharmacy and agriculture. The several affiliated denominational colleges have the power to bestow degrees in theology on students who have passed certain arts requirements in the university. These degrees on being reported to the university become ipso-facto degrees of the university.

In the first decade of this century an agricultural group of buildings was erected on a site contiguous to Winnipeg costing some \$4,000,000. On a provincial farm this cluster is equipped under a large staff representing the many phases of agriculture. It is said that this complete group is not surpassed by any set of similar buildings on the continent. The Manitoba Agricultural College is affiliated to the university. A university library growing to be worthy of recognition is now established in the university.

In the last decade of its history a very large addition has been made to the work of the arts and sciences in the university, including a law school, to civil, electrical and mechanical engineering departments, and to the branches of pharmacy, commercial education and architecture. There are upward of 50 instructors now on the university faculty.

Not only has this great development taken place in the University of Manitoba, but it is to be remembered that in less than two decades three provincial universities of western Canada, viz., those of Saskatchewan province at Saskatoon, of Alberta at Edmonton and of British Columbia at Vancouver, have been established and are developing greatly, thus cutting off a vast field of supply from Manitoba University. Under the new act of 1917 Manitoba University has become strongly supported by the provincial government, and still retains the support of the denominational colleges, which cling to their former affiliation. Notwithstanding the great demands of the World War, the number of students in the year 1917-18 reached 932. During the war the enrolment fell to 500, rising in 1939 to 4,122.

GEORGE BRYCE,  
*Founder of Manitoba College and a Founder of the Manitoba University*

**MANITOBA SCHOOL QUESTION.** In 1871, shortly after the colony of Assiniboia had become a province of Canada under the name of Manitoba, a law was passed establishing a dual system of denominational public schools, serving respectively the needs of the French



(Roman Catholic) and English-speaking (Protestant) population in the province. At this time these racial and religious components were pretty evenly divided; but immigration from Ontario speedily gave a marked preponderance in numbers to the English-speaking section, and in 1889 it was reported that of the 618 schools in the province 545 were Protestant and 73 Roman Catholic. An agitation against the system of separate schools had begun to gather volume, and in 1890 under Premier Greenway an act was passed in the provincial legislature abolishing all sectarian schools and establishing a common school system, under which all school taxes, whether derived from Protestants or Catholics, were appropriated to the support of the new public schools. The passing of this act was hotly resented by the French-speaking Catholic population as an attack on their language and religion, and as an invasion of the terms of the British North America Act and the Manitoba Act, which guaranteed minority rights in regard to education. Under the leadership of Archbishop Taché an agitation for its repeal was engaged in by his coreligionists throughout the Dominion, but the act was permitted to come into force by the federal government. A test case, however, was taken to the law courts; the judgment of the Provincial Court sustained the validity of the act, while the Supreme Court of Canada declared it to be *ultra vires*. The final court of appeal, the Judicial Committee of the Privy Council, reversed the decision of the Supreme Court and declared for the validity of the act. Appeal was then made to the Dominion government to pass a remedial act, which the Prime Minister, Sir Charles Tupper, introduced in 1896; but the measure failed to carry through the diverse sectarian elements in the House of Commons, and the government suffered defeat in the ensuing general election. A compromise was then effected under the premiership of Sir Wilfrid Laurier, the most important feature of which was embodied in clause 258 of the School Law of 1897, which provided "that where 10 of the pupils speak the French language (or any language other than English) as their native language, the teaching of such pupils shall be conducted in French (or such other language) and English upon the bilingual system." The clause, it will be observed, is somewhat loosely drawn and does not properly define what is meant by the bilingual system. No provision was then (or afterward) made for the adequate staffing of the schools with bilingual teachers. Shortly after the passing of this law a great immigration into the Canadian West began and Manitoba became a polyglot province. The result of this influx was seen in the 1911 census, when the total number of persons of foreign birth—Germans, Austrians, Poles, Jews, Russians and Scandinavians stood at 100,000. At the end of 1915 it was reported that there were 126 French schools with 7,393 enrolments; 61 German schools with 2,814 pupils, and 111 Ruthenian or Polish schools with 6,513 pupils. One-sixth of the entire school population were being educated in bilingual schools. There were five school districts in which bilingual education might have been demanded in three languages other than English and 36 districts in which the same claim might have been made for two languages other than English. Under these

conditions education remained very backward in the province—a situation that was aggravated by the indifference of communities such as the Mennonites to education itself as tending to draw its members away from the simplicity of their faith and teaching. It was only after long agitation that in the session of the legislature of 1916 clause 258 of the School Law quoted above was rescinded and nothing put in its place—a law which left Manitoba, like Prince Edward Island, New Brunswick and British Columbia, without any provision as to language in its schools. Education was at the same time made compulsory on all children between 7 and 14 years.

**MANITOU**, *mān'i-too*, a name given, among the American Indian tribes, to any spirit or supernatural being, good or evil; also applied to any object of religious awe and reverence. "The Illinois," wrote the Jesuit Marest, "adore a sort of genius, which they call *manitou*; to them it is the master of life, the spirit that rules all things. A bird, a buffalo, a bear, a feather, a skin—that is their *manitou*." "If the Indian word *manitou*," says Palfrey, "appeared to denote something above or beside the common aspects and agencies of nature, it might be natural, but it would be rash and misleading to confound its import with the Christian, Mohammedan, Jewish, Egyptian or Greek conception of Deity, or with any compound of a selection from some or all of those ideas." The word was applied to any object used as a fetish or an amulet. It was common among all Western and Mississippi tribes.

**MANITOU SPRINGS**, Colo., town and resort in El Paso County; alt. 6,336 feet, 5m. NW. of Colorado Springs, and 9m. from the summit of Pike's Peak; on the Denver and Rio Grande Western; Midland Terminal; and Manitou and Pike's Peak railroads. The town has been known as Manitou and Manitou Iron Springs. The Manitou and Pike's Peak cog railway, more than eight miles long, goes to the summit of the Peak, and there is an inclined railway to the top of Mt. Manitou (9,455 feet). Its healthgiving, highly radioactive mineral springs of soda and iron, saturated with carbonic acid gas, flowing a quarter-million gallons daily, were known to the Indians and were a neutral ground, their sacred character being marked by the name Manitou meaning "Great Spirit." John Charles Frémont (qv), explored this region in 1843 and analyzed the waters, which for a while were called Frémont Soda Springs. West of the town is Pike National Forest, part of the Pike's Peak State Game Refuge, and one of the largest forest preserves in the state. Near by are many scenic attractions, such as the Garden of the Gods, with unusual shapes and colors due to erosion, the Cave of the Winds, Rainbow Falls, and Ute Pass. Like Colorado Springs, Manitou was developed largely by General William Palmer, who, with Dr. William A. Bell, founded it in about 1872. Pop. (1940) 1,462.

**MANITOULIN** (*mān-i-too'līn*) **ISLANDS**, Canada, a group of islands in the northern part of Lake Huron, partially separating the waters of the lake from Georgian Bay, and east of the famous "Soo" Canal. The name is a corruption of the Indian word Manitowin, which means divinity. Except Drummond Isle, about 25 miles long and 9 miles



wild, the lakes belong to the State of Michigan, and the shore is a part of the province of Ontario. The largest lake of the group is Grand Manitowish, or Saint Louis, about 60 miles long and 10 miles at the widest. The coast is very irregular. Ojibwa, or Lake Manitowish, is nearly circular, and about eight miles in diameter. All the shores are well wooded; Grand Manitowish and Lake Umbagog have large pine forests. The lake waters abound in fish. Fully half the Indians are Indians of the Algonquin race. The cool climate in summer and the striking natural features add to the attractions of the lake and make them a favorite summer resort. Pop. 2,600.

**MANITOWOC**, măn-i-tō-wōk, Wis., city, port of entry, and Manitowoc County seat; alt. 535 feet; on Lake Michigan, at the mouth of the Manitowoc River; 77m. N. of Milwaukee; on the Ann Arbor, Pere Marquette; Soo; and Chicago and North Western railroads; with ferry connections across Lake Michigan to Frankfort and Ludington, Michigan. Within a semi-circle of low hills, it has a good harbor and regular steamer connection with all of the important lake ports; large grain elevators, shipbuilding and repair yards, and an extensive coal trade. Improved water, rail and highway transportation facilities have enhanced the city's importance as a shipping and shopping center. A municipal airport and numerous bus and truck lines complete the transportation network. Commercial fisheries are of importance. Shipbuilding was the city's distinctive industry from about 1860 to 1890; then on a much smaller scale until the World War of 1914-18, when the industry revived. Submarines, yachts, lake and ocean steamers are built. Other industrial products are aluminum-ware, and aluminum castings, yeast, canned vegetables, flour and malt products, condensed milk, cheese, beer, vinegar, flour, cement, tires, metal furniture, tinsel, paper containers, knit goods and electric timers. A fur trading post was set up here by Jacques Vieau for the British North West Company in 1795. Permanent settlement began with the land boom of 1835. Many Germans settled here in 1848, followed soon by Norwegians and Irish; Bohemians in 1854, and Poles after 1865. The city was chartered in 1870. The name is an Indian word meaning "land of the Great Spirit." Pop. (1920) 17,563; (1930) 22,963; (1940) 24,404.

**MANIZALES**, măn-nē-să'lās, Colombia, town, south of Antioquia and capital of Caldas, about 95 miles northwest of Bogota. The altitude is about 7,000 feet. It was founded in 1848 and its situation at the junction of main passes over the Cordillera Central range of mountains and near valuable gold mines has contributed to its rapid growth. In the valleys, in the vicinity, stock-raising is an important industry. It has fine churches and schools, a good library and a number of comfortable homes. During the civil war of 1877-78 the town was the headquarters of the rebels. The climate is not severe, although in a high altitude, as higher mountains in the vicinity are a protection. Pop. about 85,000.

**MANKATO**, man-kă'tō, Minn., city, county seat of Blue Earth County, on the Minnesota River at the mouth of the Blue Earth River and on the Chicago, Milwaukee, Saint Paul

and Pacific; the Chicago Great Western; the Chicago and North Western; and the Chicago, Saint Paul, Minneapolis and Omaha railroads, about 85 miles southwest of Saint Paul. It is situated in an agricultural region and in the vicinity are valuable stone quarries. Nine miles south is the Rapidan dam, furnishing hydroelectric power for numerous southern Minnesota cities and villages. Mankato is the leading metropolis of southwestern Minnesota, and the trade center not only for that section, but also for northern Iowa, and eastern South Dakota. Its factories produce brick, cement, clothing, leather goods, flour, foods, boxes, brooms, and numerous other items. The Mankato hog market is the third largest in the state, and the poultry industry and the creamery business are important factors in the city's commerce.

Mankato is the Sioux name for the blue earth found in the vicinity, specimens of which Le Sueur shipped to France in 1701 believing them to be copper-bearing. The city was settled in 1852 by three men from St. Paul—Henry Jackson, Parsons K. Johnson, and Daniel Williams. During its early days Indians caused much trouble. Following the uprising of 1862, over 400 Sioux Indians were tried for murdering white settlers, and 303 condemned to death were brought to Mankato and held at Camp Lincoln, now Sibley Park. President Lincoln commuted the sentences of all but 38 and these were hanged simultaneously from a single gallows on Dec. 26, 1862. Mankato was incorporated July 15, 1858, and chartered as a city March 6, 1868. It is the seat of a state teachers college and of Bethany Lutheran College. Pop. (1940) 15,654.

**MANLEY**, măn'lī, John, American naval commander: b. 1734; d. Boston, 1793. At the outbreak of the Revolutionary War he had command of the armed schooner *Lee*, with which he cruised along the coast of Massachusetts Bay, making captures of great value to the American army then investing Boston. In July 1778 his ship, the *Hancock*, was captured by a British frigate and after a rigorous confinement in Halifax, he was exchanged and in 1782 was put in command of the *Hague* frigate, which, after lying in a perilous position on a sand bank off Guadeloupe for three days, exposed to the fire of four British ships of the line, contrived to effect her escape. This exploit closed the regular maritime operations of the United States during the Revolutionary War.

**MANLEY**, Joseph Homan, American journalist and politician: b. Bangor, Me., Oct. 13, 1842; d. Augusta, Me., Feb. 7, 1905. He was graduated from the Little Blue Abbott Academy at Farmington, Me., in 1858 and in 1862 from the Albany Law School. He was admitted to the bar in 1865. In 1866 he was president of the city council of Augusta and in 1881 was appointed postmaster of Augusta by President Garfield, which office he held for seven years. Acquiring a half interest in the *Maine Farmer* he joined hands with James G. Blaine in aggressive local and national politics, dictating the editorial policy of that paper for three years. He was a delegate to the Republican National conventions of 1880 and 1888, was for many years chairman of the Maine Republican State Committee and a member of the Republican National Committee, and was a notable figure in

the executive committees of 1896 and 1900, which aided in the election of McKinley.

**MANLEY, Mary de la Rivière**, English author. b. in the Island of Guernsey about 1663; d. London, July 11, 1724. She succeeded Swift as editor of the *Examiner* in 1711. She is known for her *Secret Memoirs and Manners of Several Persons of Quality of Both Sexes from the New Atlantis* (1709), a licentious satire reflecting on politicians of the day, that caused the arrest of both the author and the publisher though they were subsequently discharged. This work was continued in the *Memoirs of Europe* (1710). She also published *Letters Written by Miss Manley* (1696); *The Secret History of Queen Zarah and the Zarahians* (1705); *The Adventures of Revella* (1714); *The Power of Love in Seven Novels* (1720), and other unimportant books.

**MANLIUS, mǎn'li-ús, Marcus**, Roman legendary hero, of the 4th century B.C., called Capitoline because of his successful defense of the Capitoline Hill. Tradition says he was aroused to action by the cackling of Juno's sacred geese just in time to prevent the surprise of the citadel by the Gauls (390 B.C.). Two years before he defeated the Aequi, and in six years after (384 B.C.) was thrown from the Tarpeian rock, having been declared guilty of plotting to become king or dictator. This judgment, almost certainly unjust, was due to the envy of the patricians, who distrusted Manlius' philanthropic endeavors to free plebeians sold for debt.

**MANLY, Basil**, American clergyman and educator. b. Pittsborough, Chatham County, N.C., Jan. 28, 1798; d. Charleston, S.C., Jan. 25, 1865. He was graduated at South Carolina College in 1821, and, after filling several charges, in 1837 he became president of the University of Alabama, remaining there nearly 20 years.

**MANLY, John Matthews**, American educator and author. b. Sumter County, Ala., Sept. 2, 1865, d. April 2, 1940. He was graduated from Furman University in 1883 and from Harvard in 1889, and took his D.Ph. at Harvard in 1890. From 1891 to 1898 he was associate professor and professor of English at Brown University and from 1898 to 1933 was professor and head of the department of English at the University of Chicago. In 1909 he was Chicago exchange professor at the University of Göttingen. He was a member of the Modern Language Association. He contributed to the *Cambridge History of English Literature* and to the *Encyclopædia Britannica* and to various periodicals. He edited *Macbeth* (1896); *Specimens of the Pre-Shakespearean Drama* (1897); *English Poetry* (1907); *English Prose* (1909); *A Manual for Writers*, with J. A. Powell (1914); *English Prose and Poetry* (1916); *Contemporary American Literature* (1922); *Some New Light on Chaucer* (1926).

**MANN, Sir Donald D.**, Canadian contractor and financier. b. Acton, Ontario, March 23, 1853. In the later 70's he went West, became manager for a firm of contractors who had a sub-contract on the Canadian Pacific line and thereafter worked continuously as a contractor until the completion of the main railway. Between 1881 and 1883 he completed various contracts for railroads and in the two follow-

ing years began railroad-building in the mountains. He also undertook contracts for construction and tunnels in Columbia Cañon and in the Selkirk Range of the Rocky Mountains. Together with Sir William Mackenzie (qv) he constructed the Canadian Northern Railway (qv). In 1887 and a part of 1888 they constructed the Canadian Pacific short line through Maine. In December 1888 Mr. Mann visited Panama, Ecuador, Peru and Chile with a view of building railways for the Chilean government, but was not satisfied with the prospects there and declined the contract offered. Later he visited China. He was associated with the building of the Qu'Appelle, Long Lake and Saskatchewan Railway, and was one of the original syndicate which built the Winnipeg Electric Street Railway. He was also interested in many other enterprises. He was knighted in 1911. He died Nov. 11, 1934.

**MANN, Heinrich**, German novelist, brother of Thomas Mann (qv). b. Lubeck, March 27, 1871. He attended the Katharineum School in his native city and then entered business. In 1893 he moved to Munich, later changing his abode to Berlin, with frequent sojourns in Italy, particularly Florence. His permanent home he finally fixed at Munich. Like his brother Thomas, Heinrich is a reserved, unsociable character, who has developed a feeling almost of hostility for the types of German life with which he is surrounded. His mother was partly of creole origin, and this circumstance is taken by some German critics (e.g., Kurt Martens in his essay in *Literatur in Deutschland*, 1910) as explaining Heinrich's predilection for the life and literature of the Romance countries as opposed to those of the Germanic countries. His first works were volumes of short stories: *Das Wunderbare* (1897); *Ein Verbrechen und andere Geschichten* (1898). Next came novels: *In einer Familie* (1898); *Im Schlaraffenland* (1901); *Die Göttinnen, oder die drei Romane der Herzogin von Assy* (3 vols., 1902-03); *Die Jagd nach Liebe* (1904). *Die Göttinnen* represents an ideal of womanhood in three different phases (Diana, Minerva, Venus) and is a brilliantly constructed hymn of joy in the Romance style. Again he turns to the short story *Flöten und Dolche* (1905), *Professor Unrat* (1905); *Eine Freundschaft* (1906). *Zwischen den Rassen* (*Between the Races*, 1908) is a novel dealing with the affection of a young girl, Lola Gabriel, for a German and an Italian, who are supposed to incorporate the virtues of their respective races. It has met with great popularity, but the attempt to capitalize racial characteristics in this way is too great a task for all but the greatest men. Heinrich Mann has also tried his hand at the drama, in *Die Schauspielerin* (1911), but with no particular success.

JACOB WITTMER HARTMANN.

**MANN, Horace**, American educationist. b. Franklin, Mass., May 4, 1796; d. Yellow Springs, Ohio, Aug. 2, 1859. He was graduated from Brown University in 1819, studied law at the Litchfield (Conn.) Law School and in offices at Dedham, Mass., in 1823 was admitted to the bar, and practised at Dedham from 1827 to 1833, when he removed to Boston. In 1827-33 he was a representative in the state legislature, in 1833-37 state senator and in 1836-37 presi-

dent of the senate. From the first he identified himself with philanthropic interests. His first speech in the assembly was on religious liberty; and one of his enterprises was the establishment of the State lunatic hospital at Worcester (1833), in connection with which he was chairman of the board of commissioners and later of the board of trustees. In 1837, upon the appointment by the State of a board of education to revise and reorganize the Massachusetts common-school system, Mann became secretary to the board (19 June). He withdrew from politics and from a lucrative practice at the bar, and devoted himself entirely to a work which proved of the greatest significance not for Massachusetts only but for the entire United States. This work he accomplished largely in spite of opposition often pronounced. For the reform of State education he founded and edited the monthly *Common-School Journal*, held teachers' conventions, published 12 most valuable annual reports and established normal schools. In 1843 at his own expense he visited Europe for the study of Continental methods. He was successful in arousing throughout the country an unprecedented interest in educational affairs. In 1848 he was elected to Congress to succeed John Quincy Adams, deceased; and he served until March 1853. He was strongly opposed to slavery, and fearlessly attacked Webster's course. On 15 Sept. 1852, he declined the nomination for the governorship of Massachusetts, and on the same day accepted the presidency of Antioch College, Yellow Springs, Ohio, in which post he served until his death, greatly influencing the educational development of Ohio. He was a Fellow of the American Academy of Arts and Sciences. In addition to his annual reports he published 'Reply to 31 Boston Schoolmasters' (1844); 'Report of Educational Tour' (1846); 'A Few Thoughts for a Young Man' (1850); 'Slavery: Letters and Speeches' (1852); 'Lectures on Intemperance' (1852); 'Powers and Duties of Woman' (1853); and 'Sermons' (1861). Consult the 'Life' by Mary P. Mann (1865); and Boone, 'Education in the United States' (1890); 'Report' (United States Commission of Education, 1895-96); Hubbell, G. A., 'Life of Horace Mann' (1910).

**MANN, James Robert**, American congressman: b. near Bloomington, Ill., 20 Oct. 1856. He was graduated at the University of Illinois in 1876 and at the Union College of Law, Chicago, in 1881. He was admitted to the bar in 1881 and thereafter practised law at Chicago. He was attorney for the village of Hyde Park in 1888 and upon its annexation to Chicago he became alderman of the 32d ward, serving in 1893-96. He was temporary chairman of the Republican State Convention in 1894. He was master in chancery of the Superior Court in Cook County in 1892-96, and general attorney of the South Park Board, Chicago, in 1895. He was elected to Congress in 1896 and served continuously until his death, 30 Nov. 1922. He was leader of the Republican minority in the House during the Wilson Administration.

**MANN, Matthew Derbyshire**, American gynecologist: b. Utica, N. Y., 12 July 1845; d. Buffalo, N. Y., 3 March 1921. Graduated at Yale 1867, at College of Physicians and Surgeons, Columbia, 1871, he later studied in Europe. He

practised medicine in New York in 1873-79; was established as a specialist in obstetrics at Hartford, Conn., in 1879-82; and in 1880-82 he was clinical lecturer on gynecology at Yale. He was professor of obstetrics and gynecology at the University of Buffalo in 1882-1910, and later was consulting gynecologist and obstetrician at the Buffalo General Hospital. He was president of the American Gynecological Society in 1894. He edited 'American System of Gynecology' (1888). Author of 'Manual of Prescription Writing' (1879).

**MANN, Thomas**, German writer of novels and short stories: b. Lubeck, 6 June 1875, of a wealthy family of merchants, whose traditions of solidity and solvency surrounded him in his youth and gave him the material for his treatment of the family life of the Hanseatic patricians in 'Buddenbrooks' and other works. After his father's death (1893) the family settled in Munich, where Mann joined them later (1894), and where he became an apprentice in the offices of the South German Fire Assurance Bank, a position of which he soon wearied. He attended lectures on aesthetics and literature at the University of Munich, later lived at Rome, returning to Munich in order to join (1899) the staff of *Symphysimus* (qv), to which he remained attached for a number of years. Mann has a delicacy and refinement of style and observation that are unparalleled in German literature. In his first long novel, 'Buddenbrooks' (1901), which established his literary reputation, as well as in his short stories, he captivates by a psychologic naturalism which is enhanced by the fact that the feelings depicted are those of well-to-do middle class persons in comfortable, if not luxuriant, surroundings. Henry James, whose attention is usually devoted to a higher social class, is the English novelist whom Mann's delicate and insinuating treatment most resembles, and the two men are also similar in their scrupulous precision and artistry of language. 'Der Tod in Venedig' ('A Death in Venice,' 1913), which has the proportions of a German *novelle* (about 100 pages), describes the last hours of an elderly German writer. 'Der Zauberberg' (The Magic Mountain), published in 1926, is generally conceded to be his greatest novel. It contributed much toward making him the Nobel Prize Winner in Literature in 1929. He has written many short stories, some essays, and a play. Later works are 'Joseph and His Brethren' (1937); 'Joseph in Egypt' (1938); 'The Coming Victory of Democracy' (1938). The Nazi régime forced him into exile. In 1938 he came to the United States and the same year was made lecturer at Princeton University.

**MANN, Tom**, English Socialist: b. Foleshill, Warwickshire, 15 April 1856. His boyhood was spent in farming and mining and from the age of 14 he served an apprenticeship of seven years at engineering in Birmingham; in 1877 he went to London, where he was prominent in connection with various trade-union affairs, and in 1885 he became a Socialist. Among his works are 'The International Socialistic Movement'; 'Russia in 1921'; 'Tom Mann's Memoirs.' D. England, 13 March 1941.

**MANN, William Julius**, American Lutheran clergyman, educator and author: b.

Stuttgart, Germany, May 29, 1819; d. Boston, Mass., June 20, 1892. He was educated at Stuttgart and Tübingen and was ordained in the Lutheran ministry in 1841. He came to the United States in 1845 with Dr. Philip Schaff. He was assistant pastor at Saint Michael's and Zion's congregation, Philadelphia, in 1850-63, pastor in 1863-84 and thereafter pastor emeritus. He was professor of Hebrew ethics and symbolics at the Lutheran Theological Seminary at Philadelphia from the time of its establishment. Author of *Plea for the Augsburg Confession* (1856); *The Lutheran Church and its Confessions* (1880); *Life and Times of Henry Melchior Mühlenthal* (1887), etc.

**MANNA**, a name for several substances, especially a saccharine matter which exudes naturally or from incisions made in the trunk and branches of a species of ash (*Fraxinus ornus*). It first appears as a whitish juice, thickens on being exposed to the air and when dried forms a whitish or reddish granular substance, which is the manna of commerce. The tree is a native of Italy and is cultivated extensively in Sicily. June and July are the two months in which the manna is collected. It is detached from the trees with wooden knives and is afterward exposed to the sun for drying. A little rain, or even a thick fog, will often occasion the loss of the collections of a whole day. The taste is sweet and slightly nauseous. It is a mild purgative and is principally administered to children. The finest kind of manna is called *flake manna*; it is white or yellowish-white in color, light, porous and friable. *Sicilian manna* is generally found in small, soft, round fragments; its color is yellowish-brown and it is generally mixed with more or less impurities. The principal constituent is mannite, chemically separable as a white crystalline substance of a sweetish taste, which also appears as a whitish efflorescence on certain edible seaweeds and fungi. To this and the saccharine elements, the nutritiousness of manna is due.

Many other sweet tree-juices go by the name of manna, or false manna, since they contain no mannite, but depend for their peculiar qualities upon the possession of melitose or melezitose. In many cases the exudation of the sap is due to the irritation produced by insects or is the product of the insects themselves. Thus edible exudations are obtained from the Oriental teatree, sandal-wood and an Australian grass (*Andropogon*); in Europe from the larch and an oak, and in Persia from the camel's thorn. American manna is derived in California from the sugar pine and from a rush (*Phragmites*); while in India a species of bamboo secretes it so copiously as to form an important food-resource for the people in periods of famine.

The tamarisk manna, derived from the tamarisk trees about the eastern end of the Mediterranean, is not a direct product of the tree, but of a scale-insect, the manna-insect (*Jossyfraria mannifera*), which abounds upon the tamarisk and secretes the substance, which some persons have regarded as the manna of the Bible. In Australia the waxen larval cases of several species of flea-lice (*Psyllidae*) that feed upon the gum-trees (*Eucalyptus*) are gathered and eaten by the natives under the name of "lerp."

The Scriptural manna (Heb. Man-hu, what is it?) is described in Exodus (xvi, 15) as covering the ground in such quantities as to supply food for the vast multitude of the Israelites. It was small and round like coriander seed, white and tasting like honey and wafer. It was of the color of bdellium (Num. vi, 7). According to the Biblical narrative it was the food of the Children of Israel for 40 years. They complained of the diet (Num. xi, 6). In Rabbinical literature there are a vast number of stories about the manna hard to accept except as myths. It cannot be identified with any of the substances known nowadays as manna; but is called in the Bible "bread from heaven," while the Jewish doctors taught that it became to each person who ate it that meat of whatever kind he liked best.

**MANNAIA**. See GUILLOTINE.

**MANNHEIM**, man'him, Germany, a large town of Baden on the Rhine, at the confluence of the Neckar, 45 miles south of Frankfurt. It lies in the administrative district of Mannheim, of 1,386 square miles area and 707,303 population. Dikes protect it from inundation and there are extensive harbors and modern docks. A bridge across the Rhine, here 1,200 feet wide, connects with Ludwigshafen, Bavaria, and there is also a bridge across the Neckar. Mannheim is the first commercial town in the Free State and on the upper Rhine. This it owes to its admirable position on two important navigable rivers and its railway communications. During World War I it was important as a distributing point for the German army. It was several times bombed by French and British aircraft, but without serious damage. The principal articles of trade are corn, flour, wood, petroleum, coal, tobacco, cattle, sugar, iron goods, etc. The manufactures consist chiefly of iron-castings, machinery, chemicals, cigars, carpets, woolen goods, paper, tiles, celluloid and rubber wares, mirrors, carriages, trinkets, sugar, liqueurs, starch, glue, etc. Mannheim was once strongly fortified and lying not far from the French frontier and near the center of military operations, suffered severely during the wars between France and Germany. In a siege by the Austrians in 1795 only 14 houses remained uninjured. Hence, notwithstanding the antiquity of its foundation, it has become an entirely modern town with regular, straight streets, known, as in America, by numbers, and with fine public squares. The principal buildings are the former Palatine palace, with a museum and picture gallery in one of its wings, a public library of 75,000 volumes and good gardens behind it; the Jesuits' church, an imposing edifice, with a profusely decorated interior; the former observatory building; the theater, one of the best in Germany; several gymnasias and schools, conservatory of music, hospitals and orphanage, town-house, railway station, etc. In 1899 the suburb of Neckarau was incorporated with it. Pop. (1939) 283,801.

**MANNING**, man'ing, Daniel, American journalist and financier: b. Albany, N.Y., May 16, 1831; d. there Dec. 24, 1887. At 10 he entered the printing office of the Albany *Atlas* which shortly after was merged in the *Argus*, upon which paper he became a reporter and in time an authority in state politics. He was as-

1813 and 1815 and later was post owner of the *Warren*. He was a strong advocate of the American cause and took up arms in 1776. He was a member of the Governor's Council and although his military service in the South State committee was not of great importance, the leaders of the Revolution were present at his inauguration in 1776. He was appointed Secretary of the Continental Congress in which office he continued until 1781. He resigned in 1887 as a result of ill health, though he was continued as a general commercial and banking adviser until his death in the same year.

**MANNING, Henry Edward**, cardinal of the Roman Catholic Church and archbishop of Westminster: b. Tottenham, Hertfordshire, 15 July 1808; d. Westminster, 14 Jan. 1892. He was educated at Harrow and Balliol College, Oxford and became a Fellow of Merton College in 1832 and in that year he was ordained and appointed curate of Woolhampton-cum-Graffham in Sussex. In 1833 he became rector of Woolhampton and was appointed archdeacon of Winchester in 1840. In 1842 he was select preacher to the University of Oxford. He took very little part in the tractarian movement and did not write any of the tracts, but he formed friendships with some of the leaders of the movement. In 1851, after the decision in the 'Gorham case,' he joined the Roman Catholic Church and was ordained priest. He founded the Congregation of the Oblates of Saint Charles at Bayswater, London, in 1857, and upon the death of Cardinal Wiseman was consecrated archbishop of Westminster in 1865. At the Ecumenical Council in 1870 he was an ardent supporter of the infallibility doctrine, and in 1875 was made a cardinal by Pius IX. Manning was a trusted leader of the Ultramontane party in his Church, and he commended himself to the world in general by his zeal on behalf of temperance, education and the betterment of the working-classes. He is the author of four volumes of sermons published before 1850; and among his other writings are 'The Temporal Mission of the Holy Ghost' (1865 and 1875); 'Petri Privilegium' (1871); 'The Vatican Decrees' (1875); 'The Catholic Church and Modern Society' (1880); 'The Eternal Priesthood' (1883); 'Characteristics' (1885); 'Miscellanies' (1877-88); 'Religio Viatoris' (1889). Consult *Lives by Hutton* (1892); *Purcell* (1896); *Ward* (1897); *De Pressensé* (1903); *Fitzgerald, 'Fifty Years of Catholic Life and Progress'* (1901). Consult his *Memorials* (1892).

**MANNING, James**, American Baptist educator, first president of Brown University: b. Elizabeth, N. J., 22 Oct. 1738; d. Providence, R. I., 29 July 1791. He was graduated at Princeton College in 1762, in 1763 became pastor of a Baptist church at Morristown, N. J., and about a year later pastor of a church in Warren, R. I. There he almost immediately commenced a Latin school, which seems to have been in some sense the germ of Rhode Island College. He had previously proposed to several influential men in his denomination, assembled at Newport, the organization of "a seminary of polite literature, subject to the government of the Baptists" and had drawn up a plan for such an institution. In 1764 the legis-

lature granted them a charter, and in 1765 he was appointed "president and professor of languages and other branches of learning, with full power to act in these capacities, at Warren or elsewhere." The college went into operation at Warren in 1766, and the first commencement was held there in 1769, when a class of seven was graduated. In 1770 it was determined to remove the college to Providence, and during the Revolution, when the college edifice was occupied as a military barrack, and afterward as a hospital, he was actively engaged in clerical duties and also rendered important services to the patriotic cause. In 1783 he resumed his duties at the college, and in 1786 represented Rhode Island in Congress, where he exerted himself to secure the adoption of the national Constitution. From 1770 till the year of his death he was also pastor of the first Baptist church in Providence. He resigned the presidency of the college in 1790. Consult *Guild, 'Life and Times of James Manning and the Early History of Brown University'* (1894). See *BROWN UNIVERSITY*.

**MANNING, Robert**, American pomologist: b. Salem, Mass., 19 July 1784; d. there, 10 Oct. 1842. He established a pomological garden at Salem in 1823 with the purpose of establishing the identity and classifying the various varieties of fruit. His efforts accomplished a great public benefit in introducing to general use the best varieties of fruit and in standardizing the nomenclature. At the time of his death his fruit garden contained more than 1,000 varieties of pears and many hundreds of apples, peaches, plums and cherries. He was an uncle of Nathaniel Hawthorne. Largely through his efforts the Massachusetts Horticultural Society was established and he was a generous contributor to its support. Author of 'Book of Fruits' (1838).

**MANNING, Thomas Courtland**, American jurist: b. Edenton, N. C., 1831; d. New York city, 11 Oct. 1887. He was graduated from the University of North Carolina, admitted to the bar and for a time practised law in his native place, but in 1855 he went to Alexandria, La., and there established himself in a large practice. He was a delegate to the Secession Convention and at the outbreak of the war entered the Confederate army as lieutenant. He served as adjutant-general in 1863 and attained the rank of brigadier-general. In 1864 he was associate judge of the Supreme Court of Louisiana. He was a presidential elector in 1872 and 1876, and in 1877 he was chief justice of the State Supreme Court. He was denied admission to the Senate upon his appointment to that body in 1880, and in 1882-86 he again filled the office of justice of the Supreme Court. He was appointed Minister to Mexico in 1886 and died in office.

**MANNING, William Thomas**, American Protestant Episcopal clergyman: b. 1866. He was graduated at the University of the South in 1893. He was ordained deacon in 1889 and priest in 1891; and in 1892 he was rector at Redlands, Cal. He was professor of dogmatic theology at the University of the South in 1893-95; and was rector at Landsdowne, Pa., in 1896-98, and at Nashville, Tenn., in 1898-1903. He became vicar of Saint Agnes' Chapel, New York, 1903; was appointed assistant rec-



tor of Trinity Parish, New York, in 1904, and rector in 1908. In 1921 he was made bishop of New York.

**MANNING**, S C., town, Clarendon County seat; alt. 91 feet, on the Black River (not navigable), the Atlantic Coast Railroad, and state and federal highways, 70m N of Charleston. It makes tobacco-curing stoves; has mayor-council government, owns its water-supply system. It was named for Gov. John L Manning. Pop. (1930) 1,884; (1940) 2,381.

**MANNING**, or **MANNYNG**, Robert, English poet: b. 1264; d. 1340? See BRUNNE, ROBERT OF.

**MANNINGTON**, W. Va., city in Marion County; alt. 967 feet; 60m SE. of Wheeling; on the Baltimore and Ohio Railroad. It is situated in a region with varied farm crops, and oil and gas wells. Pottery, glassware, tools, and cement blocks are the city's industrial products. Pop. (1930) 3,261; (1940) 3,145.

**MANNITE**, or **MANNITOL**, a singular chemical compound which has the formula  $C_6H_{12}(OH)_6$  and constitutes from 30 to 60 per cent of the weight of the dried juice which exudes from the manna ash (*Fraxinus ornus*), a tree growing in the Mediterranean regions. It occurs also in many other plants and is formed in the lactic fermentation of sugar, and also in the spontaneous fermentation of the juice of the sugar-cane, in tropical countries. It may be prepared by boiling manna with dilute alcohol, the mannite crystallizing out upon cooling. The crystals are then purified by recrystallization from water. It is a white compound, crystallizing in needles or four-sided prisms, and is readily soluble in water, insoluble in ether and but slightly soluble in alcohol. It melts at 329° F and begins to sublime at about 400° F. Mannite has a pleasant, sweet taste and in some respects it resembles the sugars. It is not a sugar, however, but a hexatomic alcohol. (See ALCOHOL). Chemically, it is derived from the hydrocarbon hexane,  $C_6H_{14}$ , by the replacement of six atoms of hydrogen by six molecules of hydroxyl (OH). Sorbite (or sorbitol) and dulcitol (or dulcitol) have the same chemical formula as mannite and resemble it very closely. They are, in fact, isomers of mannite. Sorbite is prepared from mountain ashberries, and dulcitol from Madagascar manna. See MANNA.

**MANNLICHER**, män'lih-ër, Ferdinand, RITTER VON, Austrian engineer and inventor: b Mainz, Jan. 30, 1848; d. 1904. He was chief engineer of the Northern Railroad for many years, and after the success of the needle-gun at Sadowa in 1866 began experiments which ultimately produced a magazine rifle which was adopted by the Austrian army in 1885. He became famous for his numerous inventions in small arms and was elected to the Upper House of Austria in 1899 in recognition of his distinguished services.

**MANNY**, Walter Baron de, English soldier and philanthropist: d. 1372. His memory is perpetuated as the founder of Charterhouse School (q.v.), and by his military exploits as recorded by his friend Froissart in his *Chronicles*. Scion of a noble family of Hainaut, he arrived in England in 1327 in the train of Queen Philippa, rose to high rank in the Scottish wars of Edward III, became a commander of the English fleet, and of the army in

France, and both in military commands and in diplomatic negotiations received the commendation of the king. He was created a baron and knight of the garter and in 1335 married the Countess, later the Duchess of Norfolk. Consult *Froissart's Chronicles* (Globe ed, Eng. trans., London 1895).

**MANOBAS**, mā-nō'bas, a native tribe of the Philippines, living chiefly in the valley of the Rio Agusan, island of Mindanao, and at some places in the district of Davao, Mindanao. They are of Malay race, head-hunters and largely heathen, though the work of the Jesuits among them has resulted in a considerable portion becoming Roman Catholics. The name in earlier times was often applied to other heathen tribes of Mindanao.

**MANŒUVRES**, ma-noo'verz See ARMY AND NAVY MANŒUVRES.

**MANOMETER** (Greek, "rarefaction measurer"), an instrument for measuring the pressure exerted by gas or liquid. It may have many forms, of which the mercurial barometer is one. (See BAROMETER). One of the commonest designs for the measurement of pressures not greatly different from that of the atmosphere, consists of a U-tube, one of whose legs is open to the air, while the other is in communication with the gas or liquid whose pressure is to be measured. The lower part of the U is filled with some non-volatile liquid of known density, and the difference between the pressure of the fluid under examination and that of the atmosphere is found by observing the difference between the levels of the manometric fluid in the two branches of the U-tube. If the absolute pressure of the fluid is desired, it is necessary to add the atmospheric pressure to the differential pressure as read from the manometer. In rough work it may be sufficient to assume the atmospheric pressure to be 147 pounds per square inch; but in more refined observations the atmospheric pressure must be determined by reading the barometer, simultaneously with the manometer. Mercury is commonly the liquid that is used in the U-tube, but when the differences in pressure that are to be read are very small, some less dense liquid may be used with advantage. Sulphuric acid is often employed in such cases; and where (as in the measurement of chimney draft) a slight amount of evaporation from the manometric fluid is unimportant, water may be employed. When the pressure to be measured materially exceeds one atmosphere, the siphon manometer, as just described, is modified by sealing one of the ends of the U-tube, instead of leaving it open to the air. In this case the pressure is determined by observing the amount of compression that it produces in the air that is confined in the sealed arm of the siphon, by the manometric fluid; for it is known by Boyle's law, that the volume of the air in this arm is sensibly proportional to the reciprocal of the absolute pressure, so long as the temperature remains constant. Boyle's law is not rigorously exact, however, and when a high degree of precision is required from the compression manometer, it is necessary to make allowances for its error. Data for this purpose have been given by Amagat, up to 85 atmospheres, when the temperature of the manometer is maintained at 16° C. (60.8° F.). Consult

Amagat, 'Comptes Rendus,' Vol. XCIX, p 1153; Preston, 'Theory of Heat,' p 403. In steam engineering the commonest form of manometer is the 'Bourdon gauge,' which depends for its action upon the elastic deformation of a flattened metallic tube when exposed to an internal pressure. In practice the flattened tube is bent into a circular form, one end of it being fixed while the other communicates, by means of a multiplying gear, with an index hand which travels over the face of a graduated dial. A tube so constructed straightens out slightly when subjected to an internal pressure, returning again to its original form when the pressure is removed. The deformation is approximately proportional to the magnitude of the pressure (so long as the tube is not strained beyond its elastic limit), and hence the dial may be graduated, without difficulty, so as to indicate true pressures, at least to a degree of precision quite sufficient for the purposes of steam engineering. All such gauges should be carefully compared with a standard mercury column, however, before great reliance is placed upon them; for it is found that they are sometimes seriously in error in some parts of the scale, even when sensibly correct in other parts. In using them in connection with steam boilers, care should also be taken to prevent steam or highly heated water from coming into direct contact with the curved tube, since the elastic properties of the tube are injured by overheating. To ensure the proper protection of the gauge, a siphon, or a complete circular bend, should be placed in the pipe between the gauge and the boiler. The trap so formed will fill with water of condensation the first time the boiler is fired up, and thereafter it will be impossible for steam to enter the gauge directly.

**MANON LESCAUT**, a short novel of 200 pages, the seventh volume of a larger work, 'Memoirs of a Nobleman,' has sufficed to assure the reputation of its author, Prévost d'Exiles (1697-1763), better known as L'Abbé Prévost. After a life of adventure in France, England, Holland and Germany when he was in turn soldier, monk, journalist, teacher and later chaplain of the Prince of Conti, Prévost became a professional writer and composed more than 100 volumes. He also translated many English works, and among those, his adaptations rather than translations of 'Pantela,' 'Clarissa Harlowe' and 'Grandison' gave to Richardson a great popularity in France during the second half of the 18th century, to the detriment of Prévost's own works. Of all Prévost's novels, critical articles in the periodical *Pro and Con* and pseudo-scientific travel stories, *Manon Lescaut* alone survives. Published in Holland in 1731, it "took like wild fire" according to contemporary testimony and more than 30 editions were printed before the end of the century, that of 1753 revised and corrected by the author being considered as the best. This novel is the story of the passionate love of the young Chevalier des Grieux for the courtesan Manon. It is told in a simple narrative style and with a sincerity which leads us to believe that Prévost relates at least in part some episodes of his stormy life. The novel presents a realistic and painful picture of the sufferings which uncontrolled passion brings upon those who lack the will power to resist it, and while Prévost does not attempt to excuse

or justify the faults of his heroes, he shows passion as a terrible force whose victims are to be pitied rather than blamed. Prévost had many imitators even in his own time, and the theme of Manon, dealing with rehabilitation through love and sufferings, is found later in 'Marion Delorme' (Hugo), 'La Dame aux Camélias' (Dumas), 'Sapho' (Daudet) and in the works of several Russian novelists.

LOUIS A. LOISEAUX.

**MANOR** (old French *manoir*, *manoir*, from *L. manere*, to remain, being the residence of the owner), a piece of territory held by a lord or great personage, who occupied a part of it, as much as was necessary for the use of his own household, and granted or leased the remainder to tenants for stipulated rents or services. No manors, with all their incidents and franchises, have been granted in England since the reign of Edward III. One of the most important incidents to these ancient manors was the right to hold a court, called a *court-baron*, which was held within the manor, and had jurisdiction of misdemeanors and nuisances within the manor, and disputes about property between the tenants. The manor system was in vogue in the United States only during the British occupation, but many old manor names like Briarcliffe manor, Pelham manor, etc., are still retained by the present owners of large estates. See also **TENURE**.

**MANOURY, General.** See **MAUNOURY**.

**MANRIQUE**, man-rê-kā, *Angel*, Spanish poet and ecclesiastic: b. Burgos, 1577; d. Badajoz, 1649. He rose to high rank in monastic life, becoming finally head of the Cisterciens throughout Spain, and finally bishop of Burgos (1645). He wrote a history of the Cister order which had considerable reputation throughout Europe. He also wrote many devotional and other works of a religious or religio-historical nature.

**MANRIQUE, Gómez**, Spanish poet and dramatist: b. about 1415; d. 1491. He was son of Pedro Lord of Amusco, and a younger brother of Rodrigo Manrique, master of Santiago and one of the troubadours of the court of John II. He became a soldier of some note and took part in wars against the Moors. He sided with the Infante, Don Enrique, against Alvaro de Luna and the royal court. He was very active and seems to have taken part in almost every political disturbance and warlike expedition of Spain in his day. He was very much mixed up in the political move which forced the marriage of Ferdinand of Aragon and Isabel of Castile, which was of great significance since it ultimately led to the expulsion of the Moors from the country and the political and national unity of all Spain. He attained to numerous high offices under the king of Aragon and later under the united crowns of Castile and Aragon, becoming finally a member of the royal council and the confidant of the joint sovereigns. Gómez Manrique, notwithstanding his tempestuous and warlike life, was one of the greatest orators of his age and a talented poet. He was one of the set of writers who sang the glories of the Virgin Mary and their love for and devotion to her. He was a satirist with a keen sense of humor, and he attempted nearly every class of literature known in his day in Spain.

He played his part in helping to introduce into Spanish poetry the poetical forms of Italian literature. He also wrote religious dramas in the form in which they appeared in his age. For this reason and for the fact that he introduced more than customary life into these dramatic pieces, his work had considerable influence on the development of the drama, both religious and, subsequently, profane, in Spain. The best of his religious dramas, all of which are of a liturgical caste, is 'Representación del nacimiento de Nuestro Señor'. He also wrote on political and philosophical subjects and on matters of ethics and vices such as gluttony, envy, laziness, and of virtues, such as reason (in human actions), faith, prudence and honesty of purpose in government. His poem on the death of the Marques de Santillana became immensely popular and Gómez Manrique rose to be the most quoted writer and most recited lyrical poet of his day. His 'Cancionero' has been published several times and poems of Gómez Manrique have appeared in various other *cancioneros*. Consult Menéndez y Pelayo, Marcelino, 'Antología de poetas líricos castellanos' (Vol. VI, Madrid 1886); Pas y Melia, A., 'Cancionero de Gómez Manrique' (Madrid 1885); Ríos, Amador de los, 'Historia crítica de la literatura española.'

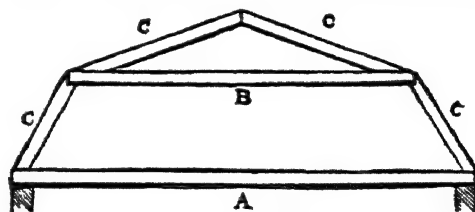
**MANRIQUE, Jorge**, Spanish poet: b. about 1440; d. 1479. He was son of Rodrigo Manrique, grand master of Santiago. He early took a prominent part in the troubles of the reign of Henry IV, taking sides with Don Alfonso. Notwithstanding the fact that most his life was passed in active military duty and that he died in battle in the attack on the fortress of Garcí-Muñoz, he yet attained such an eminence as a poet that he is still classed among the great writers of Spain, and a worthy nephew of Gómez Manrique (q.v.) and heir of his father, Rodrigo Manrique, who was one of the successful troubadours at the court of John II, one of the foremost patrons of lyrical poetry. Jorge Manrique has written satires, love songs and poems of a like nature common to the age in which he lived, but his most noted poem and the one to which he owes his lasting fame is 'Coplas de Jorge Manrique por la muerte de su padre'. This is one of the finest lyrics in the Spanish language, instinct with true poetic form and thought and sympathy. This poem has been imitated and praised by some of the greatest writers of Spain and it has found universal favor in the eyes of the critics. Longfellow has made a worthy translation of it into English; and it was set to music as far back as the 16th century by Venegas de Henestrosa. (See *COPLAS DE MANRIQUE; ROMANCERO DEL CID*). Consult Longfellow's translation and Fitzmaurice-Kelly, James, 'A History of Spanish Literature' (New York 1898); Menéndez y Pelayo, Marcelino, 'Antología de poetas líricos castellanos' (Vol. VI, Madrid 1896); *Biblioteca de autores españoles* (Rivadeneira, Vols. XXXII and XXXV) contains his works and notices thereof.

**MANS, Le**, France, the capital of the department of Sarthe, on a height above the Sarthe, here crossed by three bridges, 115 miles southwest of Paris. It consists of a lower and an upper town. The principal edifice is a fine Gothic cathedral of the 11th century. It has a

seminary, excellent schools, a public library of 60,000 volumes and several museums. The chief manufactures are metal works, railway cars, tobacco, canned goods, chemicals, cordage, leather and woolen and linen goods; being a railway centre it is a distributing point for farm produce, canned goods, wines, etc. Le Mans existed in the time of the Romans under the name of Cenomani, a tribe who inhabited the district. Numerous vestiges of Roman structures (subterranean aqueducts, walls, etc.) still remain. It was long in the possession of the English, and Henry II, the first Plantagenet, was born here. During the Franco-German War (1870-71) General Chanzy was defeated here by Prince Frederick Charles and the Grand-duke of Mecklenburg. A monument commemorates the battle. Pop. about 73,000.

**MANSARD, man-sâr, or MANSART, François**, fran-swa, French architect: b. Paris, 23 Jan. 1598, d. there, 23 Sept. 1666. He designed many important buildings in Paris, as well as provincial châteaux and country seats. The châteaux at Blois are partly his work, and he built the church of Val de Grâce and the Hotel Carnavalet. The mansard roof is called after him.

**MANSARD ROOF**, in architecture (so called from François Mansard, or Mansart (q.v.), a French architect to whom the invention is attributed), a roof formed of two sets of rafters, of which the upper set are more inclined to the horizon than the lower set, and



Mansard Roof.

form an obtuse angle at the ridge. The transverse beams connecting the lower ends of the under set of rafters are called as in ordinary roofs tie-beams; the corresponding beams at the union of the upper and under rafters are called collar-beams.

**MANSART, Jules Hardouin**, zhul är-doo-än man-sâr, French architect: b. Paris, 16 April 1645; d. Versailles, 11 May 1708. He was a nephew of François Mansart, or Mansard (q.v.). He directed all the great building operations of Louis XIV, who heaped favor and wealth upon him. His works include the palace at Versailles; the Maison de Saint-Cyr; the Grand Trianon; the triple dome of the Invalides, and the Chateau de Clagny, the residence of Madame de Montespan. He also designed the Place Vendôme and the Place des Victoires.

**MANSE**, in Scotch law, a name given the dwelling-house of the minister of the Established Church. In popular use the term is often applied generally to the dwelling-house of any minister of a dissenting congregation. In the Established Church every first minister of a rural parish is entitled to a manse, which the heritors or landed proprietors in the parish are bound to build and uphold. When a manse has

been built or repaired by the heritors it becomes a free manse, and all ordinary repairs have to be done at the charges of the minister.

**MANSEL, Henry Longueville**, English physician and biologist. b. Cosgrove, Northamptonshire, Oct. 6, 1829; d. London, July 31, 1871. He was educated at Saint John's College, Oxford, and took orders in the Anglican Church in 1845. He became Weynethite professor of physiology at Oxford in 1850, regius professor of ecclesiastical history, 1867, and dean of Saint Paul's, London, 1868. He was made a canon of Christ Church, Oxford, in 1867.

**MANSFELD, mans'fēlt, Peter Ernst I**, Count, Austrian general and statesman. b. July 15, 1517, d. Luxemburg, May 22, 1604. He became governor of the Low Countries after the death of the Duke of Parma.

**MANSFELD, Peter Ernst II, Count**, German Protestant military leader. b. Luxemburg, 1580; d. Racowitza, Bosnia, Nov. 29, 1626. He was a natural son of the preceding, but, disappointed in regard to the inheritance of his father's lands, joined the Protestant princes and became the bitter enemy of Austria. He gained a victory over Tilly at Wiesloch in 1622, but was defeated by Wallenstein at Dessau in 1626, and died soon after.

**MANSFIELD, mänz'fēld, Edward Deering**, American author. b. New Haven, Conn., Aug. 17, 1801; d. Morrow, Ohio, Oct. 27, 1880. He was graduated at West Point in 1819 and at Princeton in 1822 when he took up the study of law and was admitted to the bar in 1825. He went to Cincinnati to engage in practice until 1835 when he accepted the chair of constitutional law and history in Cincinnati College. He resigned to enter journalism and was editor of the *Cincinnati Chronicle*, the *Atlas* and the *Railroad Record*. For many years he was a contributor to New York newspapers under the title "Veteran Observer."

**MANSFIELD, Joseph King Fenno**, American soldier. b. New Haven, Conn., Dec. 22, 1803; d. near Sharpsburg, Md., Sept. 18, 1862. He was graduated from West Point in 1822 and in the Mexican War became chief engineer under General Taylor. He took an active part in the engagements at Fort Brown, Monterey and Buena Vista. In 1853 he was appointed inspector general of the United States Army and served in that capacity until 1861 when he was made brigadier-general and given command of the Department of Washington. He was in command of a corps of the Army of the Potomac at Antietam and was killed there.

**MANSFIELD, Katherine** (pseudonym of KATHLEEN, nee BEAUCHAMP, bē'chām, MURRY), British writer. b. Wellington, New Zealand, Oct. 14, 1888; d. Fontainebleau, France, Jan. 9, 1923. She lived most of her early childhood in the small township of Karori near Wellington. At 14, she went to London to school and, except for a two-year visit in New Zealand, spent the remainder of her life in Europe. Her first short stories were published in small literary magazines. Upon the publication of her volumes of short stories, *Bliss* in 1921 and *The Garden Party* in 1922, it was immediately recognized

that hers was one of the rare talents of 20th century literature. She was married twice, to George Bowden in 1909, whom she divorced, and in 1918 to John Middleton Murry, the English critic. Because of poor health she spent considerable time in the south of France and died at thirty-five from tuberculosis.

In her stories, Katherine Mansfield disregarded plot to relate simple, meaningful incidents with a sensitivity and a masterful sense of character delineation that have seldom been equalled. The stories are admired and loved for their warm, sympathetic quality and an undertone of heartbreak. In *The Doll's House* she uses a plaything to show the natural cruelty of children and the domineering social attitudes of adults. In *The Garden Party* she tells of an adolescent's first experience with death, at the close of what had been an idyllic summer's day. *A Cup of Tea* is a study of the mixed emotions of a vain young wife who would like to be charitable. In *Bliss* she shows that a blooming pear tree can overpower a woman with its beauty, and then in an instant become a symbol of silent mockery.

Her best known stories can be found in innumerable anthologies; her husband, J. Middleton Murry, has edited biographical material, including: *The Journal of Katherine Mansfield* (1927); *The Letters of Katherine Mansfield* (1928); and *The Scrapbook of Katherine Mansfield* (1939). See also NEW ZEALAND LITERATURE AND ART; ENGLISH LITERATURE, TWENTIETH CENTURY—Fiction.

**MANSFIELD, Richard**, American actor. b. Heligoland, May 24, 1857; d. New London, Conn., Aug. 30, 1907. He first studied art, opening a studio in Boston, but later returned to England and entered the theatrical profession. He played small parts in comic opera, and first appeared in America as Dromez in *Les Manteaux Noires* at the Standard Theatre, New York. He afterward was very successful in a wide variety of plays and became the head of his own company. He created such parts as Beau Brummel, Baron Chevril, Dr. Jekyll and Mr. Hyde, and Monsieur Beauchaire; among his other most successful rôles were Cyrano de Bergerac, Shylock, Henry V, Brutus, and Peer Gynt.

**MANSFIELD, William Murray**, EARL OF, British jurist. b. Scone, Scotland, March 2, 1705; d. London, March 20, 1793. One of the youngest sons of 5th Viscount Stormont, he was educated at Christ Church, Oxford; studied law; was called to the bar in 1730; won a large Scottish practice and many literary friends, the foremost being Alexander Pope. In 1742 he was made solicitor general and entered Parliament. Though of Jacobite descent he upheld the Hanoverian interest in 1745, did special service in 1748 by his defense of the Treaty of Aix-la-Chapelle, and was admitted leader of the House. An attempt to prove him guilty of treason or disloyalty to the Crown was unsuccessful, although often repeated. He was made attorney-general in 1754 and chief justice and Baron Mansfield in 1756. He became Earl of Mansfield in 1776; proposed the coalition of 1779, and in 1780 suffered at the hands of the Gordon rioters because of his sympathy with Catholic emancipation. In 1788 he retired from the bench. Although unpopular and constitutionally a believer

in royal prerogative, Mansfield was a great judge, whose work was not too conservative, and an able, calm, logical debater. Possibly his greatest labor was his revision of the mercantile law.

**MANSFIELD**, England, a market town and municipal borough in Nottinghamshire, 15 miles north by west of Nottingham, in a deep valley, in the midst of a rich coal district, surrounded by vestiges of Sherwood Forest. There are cotton mills, manufactures of silk and cotton hosiery, lace thread-mills, boots and shoes and cigar-making. It is supposed to mark the site of a Roman station. Pop. 44,000.

**MANSFIELD**, La., town and De Soto parish seat; alt. 332 feet; 34m. S. of Shreveport; on the Kansas City Southern Railroad; has an airport. It is a shipping center; has a Civil War battlefield park, and is governed by a mayor and council. Pop. (1940) 4,065.

**MANSFIELD**, Mass., town in Bristol County, alt. 178 feet, on the New York, New Haven and Hartford Railroad, 24m. SW. of Boston. Long an industrial town, its products include cotton fabrics, tanks, taps and dies, jewelry, and foundry castings. It has a board of selectmen and a town manager. The water system is publicly owned. Pop. (1930) 6,364; (1940) 6,530.

**MANSFIELD**, Ohio, city and Richland County seat, alt. 1,200 feet, on the Pennsylvania; Erie, and Baltimore and Ohio railroads and on state and federal highways, 40m S. of Lake Erie. It makes brass, electrical appliances and motors, rubber tires and tubes, sheet steel and tin plate, gas ranges, plumbing fixtures, woolen knit goods, and farm implements. It has mayor-council government, with a service director or city manager. There is a municipal airport here; a Carnegie library; a historical museum; a hospital, and a tuberculosis sanitarium. Mansfield is the seat of a state reformatory. The city was named in honor of Jared Mansfield, surveyor-general of the United States, under whose direction it was laid out by Gen. James Hedges. The plants of the Ohio Brass Company and the Westinghouse Company are show places. In Middle Park there is a monument to Johnny Appleseed (John Chapman). Pop. (1930) 33,525; (1940) 37,154.

**MANSFIELD**, Pa., borough in Tioga County; alt. 1,174 feet; on Tioga River, and the Erie Railroad; 29m. SW. of Elmira, N. Y. It is in a farming, bituminous coal, and gas area and is noted for its manufacture of novelties. It has a public library and here is the Mansfield State Teachers' College. The site, cleared as a field by Asa Mann in 1804 and known as "Mann's Field," later became a village and was incorporated in 1857. Pop. (1940) 1,880.

**MANSFIELD**, Mount, in Vermont, one of the highest elevations of the Green Mountains, 4,405 feet; in the northwestern part of the State, about 23 miles east of Burlington. The view from its summit includes the Adirondack and White mountains, Lake Champlain, a large portion of the northern part of Vermont and some of New Hampshire. See **GREEN MOUNTAINS**.

**MANSFIELD COLLEGE**, Oxford, England, a theological institution established in 1886 for the education of men for the Noncon-

formist ministry. It owes its inception chiefly to Congregational support. Its students must be graduates of some recognized university, or undergraduates of Oxford who have passed Moderations. The staff consists of a principal, a vice-principal, three lecturers and a bursar. Mansfield House, at Canning Town (West Ham), is a settlement in connection with the college.

**MANSFIELD PARK**. This quietly charming novel of manners, published in 1814, is perhaps less popular than some of the other works of Jane Austen, but it is regarded by more than one critic as even superior to them in richness and maturity. As the title implies, the story is built around English countryhouse life. Fanny Price, an indigent niece, is taken into the family of Sir Thomas Bertram. Overlooked for the most part by Sir Thomas and his wife, subjected to the carping control of the odious Mrs. Norris, Lady Bertram's sister, and neglected or patronized by three of her cousins, Fanny finds her chief consolation in the casual kindness of her remaining cousin, Edmund, whom she grows to love. But Edmund is attracted by the dashing and sophisticated Mary Crawford, who with her brother, Henry, is visiting at the neighboring rectory. Henry, in turn, after various flirtations with the Bertram sisters, pays suit to Fanny. The unfolding of these several relationships by means of seemingly insignificant incidents—dances, excursions, amateur theatricals—constitutes some of Miss Austen's most skilful work and affords her opportunity for those delicately humorous, mildly ironical accounts of the life she knew best, that have made her immortal. Of course in the end Henry and Mary Crawford are eliminated and Edmund loves and marries his Cinderella-like cousin. No single character in this novel is as well known as Mr. Collins of *Pride and Prejudice* or Miss Bates of *Emma*; yet the various personages are excellent examples of the author's nice discrimination and marvelous insight. Each character is clearly portrayed though not unduly simplified; each exhibits in varying proportions that mixture of good and evil common to all mankind. In a word, the characters are not types or Elizabethan "humors," but are richly human. *Mansfield Park* appeals to many classes of readers. It is the best kind of historical novel, for it records vividly the manners and customs of ordinary folk in the Napoleonic era. It is a superb example of a serene, balanced realism, avoiding alike the rose-pink and the dirty drab that Meredith later reprehended. It is an almost flawless instance of pure comedy in fiction. Consult Howells, W. D., *Heroines of Fiction*; Cornish, Francis Ware, *Life of Jane Austen*; Smith, Goldwin, *Life of Jane Austen*.

GEORGE B. DUTTON.

**MANSHIP**, Paul, American sculptor; b. Saint Paul, Minn., Dec. 25, 1885. He received his early education at the Saint Paul Institute of Arts, where he evinced marked talent for sculpture, and later studied at the American Academy in Rome. His first achievement was the winning of the Helen Barnet prize, in the National Academy of Design in 1913, and he won this again in 1917. He was also awarded a gold medal at the San Francisco World's Ex-



position in 1915. His statues are to be seen in the Metropolitan Museum in New York, Pratt Institute, Brooklyn, Art Institute, Chicago, and other leading institutions.

**MANSILLA DE GARCIA, Eduarda,** *La hija del mar-silla* *du car-sa*, Argentine novelist; b. Buenos Aires, 1838. Her maiden name was Mansilla; at 16 she married Manuel R. Garcia, a diplomat, and at 19 published '*El México de San Luis*,' possibly her best novel. It was followed by '*Lucia Miranda*,' a historical novel on the discovery of La Plata, and by '*Pablo, ó la Vida en las Pampas*,' which with its fresh description of Argentine life made a great impression in Paris and was praised by Hugo. She was a musician of much talent and wrote, besides novels, several plays.

**MANSION HOUSE,** in London, England, the official residence of the lord mayor, built on the site of the Old Stock Market in 1739 from designs by George Dance, at a cost of \$213,100. It is an oblong building and contains an Egyptian banquet hall accommodating 400 guests.

**MANSLAUGHTER,** the killing of a human being; in criminal law the second degree of felonious homicide. Murder and manslaughter are distinguished from each other by the intent which causes or accompanies the act. If a homicide be not justifiable nor excusable, and yet be not committed with malice aforethought, it is manslaughter and not murder. It is quite certain that the intent need not be to kill; for while there must be a criminal intent to make a person amenable to law as a criminal, yet if one crime be intended, and in the act of committing it another of a higher character be also committed without intent, the criminal is responsible for this higher crime. The general principle laid down in respect to manslaughter is, that not only a positive intention to commit some crime, but mere negligence, may make one guilty. If any one take upon himself an office or duty requiring care or skill, he is liable for the want of either; and if death be the consequence of his ignorance or carelessness, he is guilty of manslaughter. So if one driving furiously run over and kill a person whom he did not see, or if one in command of a steamer or sailing-vessel by reason of gross negligence run down a boat and some one in it be drowned, this would be manslaughter. So, if any one, whether medical by profession or not, deal with another as a physician, and through gross want of care or skill kill him, or if any one charged with building a house of any kind construct it so badly that it falls and kills persons within or near it; or if in building he drop a stone upon some one passing below and kill him; in all these cases he would be guilty of manslaughter, provided he were grossly negligent in the act causing the death. This is the essential question.

Blackstone defines manslaughter thus: "Manslaughter is the unlawful killing of another without malice either express or implied; which may be either voluntarily, upon a sudden heat, or involuntarily, but in the commission of some unlawful act."

The judicial treatment of this crime, being regulated by statute, varies in the several States. The element of premeditation is not essential to conviction of this crime. There are cases

which the law regards as only manslaughter, without evidence of momentary excitement; partly because the law infers that from such a provocation there must be excitement; and partly, perhaps, because the party killed brought his death upon himself by his outrageous wrong. Thus, if a husband detects his wife in adultery and instantly and purposely takes either her life or the adulterer's, it is only manslaughter. Not so, however, if he waits for a subsequent opportunity, for then the first reason wholly fails, and the killing becomes murder.

In New York State four degrees of manslaughter are defined. The first carries a penalty of not over 20 years' imprisonment, the second degree not over 15 years. The first degree, briefly stated, consists of killing without the purpose of death, when the deceased was engaged in perpetrating or attempting a crime less than felony, and where such killing would be, at common law, murder. Assisting in self-murder is manslaughter in the first degree, as also wilfully killing an unborn quick child by injury to the mother if it would be murder in case the mother died from the injury. The second degree consists in procuring abortion otherwise, killing in the heat of passion without the intent of death, but in a cruel and unusual manner; or killing unnecessarily one attempting to commit felony. The third degree is killing in heat of passion, without intent of death, but with a dangerous weapon; involuntary killing, by procurement or negligence of another, while the person killed is engaged in committing a trespass on property; suffering an animal known to be mischievous to go abroad without care, or keeping it without care, and thereby causing death; receiving wilfully or negligently so many persons in a boat or vessel as to cause death; racing while in command of a steamboat carrying passengers, bursting the boiler, and so killing, killing by a physician while in a state of intoxication. The fourth degree may be said to include all other modes or forms of manslaughter, known as such at common law, and of a milder kind than the preceding. There is much difference between the States in the penalties prescribed. Some States, as Louisiana, Maine and Maryland, assign "not over 20 years" to both first and second degree manslaughter, thus practically leaving the penalty to the judge's discretion; other States, as New Hampshire and South Carolina, call for "not over 30 years," while Texas, West Virginia and Delaware place five years as the greatest punishment. Several States make second degree manslaughter "not over one year" in prison. See **HOMICIDE**.

**MANSURA, MANSURAH, or MANSOURAH,** *mān-soo'ra*, Egypt, a town on the Damietta branch of the Nile, 34 miles southwest of Damietta. It has railway connection with Zagazig and Cairo and is the chief depot of the bread-stuffs, cotton, indigo, hemp and flax which this part of the Delta produces. There are also linen and cotton manufactories, etc. Mansurah was founded in 1221 and here in 1250, during the Crusades, Louis IX of France was captured and imprisoned. Pop. about 64,000.

**MANTA, mān'tā**, Ecuador, city, port of entry on the Pacific Coast, about 155 miles southwest of Quito. It has an excellent harbor and steamer connection with nearly all the Pacific

Coast towns of South America. It was founded as early as 1534-35, and for many years its importance has been in being the port of Montecristi, which is about 10 miles inland. The chief exports are coffee and rubber. Pop. 8,000

**MANTALINI**, măn-ta-lě'ně, a low and affected character in Dickens' 'Nicholas Nickleby' who lives on the labors of his wife, mantua-maker.

**MANTARO**, măn-tă'rō, a river in Peru which has its rise in the mountains in the western part of the province of Junin. Its source is about 13,000 feet above the sea. It flows south and east to Huanta, near which it breaks through the mountains and turns northwest which course is continued for about 60 miles, when again it changes and flows northeast to Pisquium, where it joins the Apurimac River and forms the Ené. The Mantaro is nearly 300 miles long and navigable only a short distance above the junction with the Apurimac. It has extensive water power which is not used except in a few cities.

**MANTEGAZZA**, Paolo, pa'ō-lō man-tā-găt'sa, Italian author and physiologist. b. Monza, Italy, 1831; d. 1910. He was educated at the universities of Pisa and Milan, spent several years in traveling, visiting almost every portion of the globe, after which he returned to Milan and practised medicine there. He was appointed professor of physiology at Pavia in 1860 and in 1870 became professor of anthropology at Florence, where he founded the Museum of Anthropology, also a society and a review of anthropology. He was a member of the Italian Parliament 1865-76 and then became senator. He is the author of many medical and philosophical books; among them are 'Elementi d'igiene' (1875); 'Fisiologia del piacere' (1881); 'Le istasi umane' (1887), 'L'anno 3000' (1897); 'L'amore' (1898), etc. He has also written books of travel and has devoted a share of his attention to political affairs.

**MANTEGNA**, Andrea, Italian painter: b. Vicenza 1431; d. Mantua, 13 Sept. 1506. His master, Squarcione, was induced by the talents which he displayed to adopt him as a son. The youth employed himself principally in drawing from antiques, and at the age of 16 painted a picture for the grand altar in the church of Saint Sophia at Padua. About 1468 Mantegna entered the service of Ludovico Gonzaga, at Mantua, where he opened a school. Here he painted his great picture, the 'Triumph of Julius Cæsar,' for the tapestry of a palace erected in Mantua. It consists of several cartoons, which have since been transferred to Hampton Court. Gonzaga conferred on him the honor of knighthood in reward for his merit. Innocent VIII invited the artist to Rome to paint in the Belvedere. One of the best of this artist's works is the 'Madonna della Vittoria,' now in the Louvre at Paris, in which Giovanni Francesco Gonzaga is seen returning thanks for the victory gained by him in 1496 over the forces of Charles VIII. The genuineness of this picture is, however, sometimes doubted. There are several others of his works in the Louvre, and an 'Annunciation' in the Dresden Gallery. The New York Historical Society has his 'Crucifixion,' the Metropolitan Museum 'Holy Family,' the Johnson Gallery in Philadelphia

his 'Adoration of the Magi.' He was also noted as a fine engraver, and left many notable copper plates of both religious and historical subjects. Consult Bell, N. R. E., 'Mantegna' (New York 1911).

**MANTELL**, Gideon Algernon, English geologist: b. Lewis, Sussex, 1790; d. London, 10 Nov. 1852. For many years he practised as a medical man, and employed his leisure time in studying the strata and fossil remains of the weald district, by which he was surrounded. Through his investigations the fossilized skeletons of the *Iguanodon* and *Hylæosaurus* were discovered, the fresh-water origin of the wealden beds demonstrated and many other important facts established in regard to the geology of that district. He published 'The Fossils of the South Downs' (1822); 'Illustrations of the Geology of Sussex' (1822), and the very popular 'Wonders of Geology' (1838); and 'Medals of Creation' (1844). His magnificent collection of fossils was purchased in 1839 for the British Museum.

**MANTELL**, Robert Bruce, American actor: b. Irvine, Scotland, 7 Feb. 1854; d. 27 June 1928. He made his debut at Rochdale, England, in 1876, and in 1878 played in juvenile rôles with Modjeska in the United States. He then spent three years in England as leading man, returning to New York to play with Fanny Davenport. He became a star and played at the head of his own company, presenting the leading classical and romantic rôles, including Hamlet, Macbeth, Romeo, Richelieu, etc.

**MANTES**, mant, France, a town in the department of Seine-et-Oise, on the left bank of the Seine, opposite Limay, with which it communicates by two handsome bridges connecting the banks with an island in the river, 29 miles west-northwest of Paris. It contains a fine Gothic church, with two lofty towers; a beautiful Gothic tower, the only remains of the church of Saint Maclou; and has manufactures of tiles and baskets, famous breweries, numerous mills and a trade in leather, corn and wine. William the Conqueror received his death-wound at Mantes. Pop. 9,700.

**MANTEUFFEL**, măn'toif-fěl, Edwin Hans Karl, BARON VON, German field-marshal: b. Dresden, 24 Feb. 1809; d. Karlsbad, 17 June 1885. He entered the army in 1827 and advanced rapidly, becoming lieutenant-general of cavalry 1861. He took part in the Danish War of 1864, and next year was appointed governor of Schleswig. During the war between Prussia and Austria he commanded the army of the Main, and fought at Hemstadt, Vettingen, Rossbrunn and Würzburg. He served with distinction in the Franco-German War, especially in several actions around Metz, at Amiens, and from June 1871 to July 1873 he commanded the army of occupation in France, and was made field-marshal. In 1879 he was appointed governor-general of Alsace-Lorraine, and in this capacity showed singular want of skill and tact in ruling a conquered people.

**MANTI**, măn'ti, Utah, city, Sanpete County seat, alt. 5,548 feet, on the Denver and Rio Grande Western Railroad, 126m. S. of Salt Lake City. It is situated in a sheep-raising region. Poultry and dairy products are handled. The city has a Carnegie library, a hospital, a

National Guard armory, and a county-city jail. There is a Mormon temple here; also, three Mormon churches and a Presbyterian church. The name Mantinea is taken from the Book of Mormon. Mantinea has a mayor and council. Its water supply is supplied from mountain streams (Pop. (1900) 2,201; 1940, 2,258).

**MANTINEA**, mân-tî-nê-â, Greece, one of the most ancient and important cities of Arcadia, on the border of Argolis on the little river Ophus. The site is now known as Palaeopolis, and excavations and explorations by the French school at Athens have disclosed the foundations of the walls and buildings of the ancient city. Mantinea was known for its wealth, and famous for the battles fought near it, in 418 B.C., when the Argives, Athenians and Mantineans were defeated by the Spartans, in 385 B.C., when the city was taken and destroyed by the Spartans, and in 362 B.C., when the Thebans under Epaminondas defeated the Spartans, although the victory of the Thebans was purchased with the life of their commander. Mantinea was, in 226 B.C., surprised by Aratus; and in 222 B.C. taken by Antigonus Dosis; on this occasion the town was sacked, and the inhabitants sold as slaves. Another battle was fought near Mantinea 207 B.C., between Machanidas, tyrant of Lacedaemon, and Philopomen, general of the Achaean League. The latter was victorious, and slew the tyrant with his own hand. The French school at Athens financed an archeologist, G. Fougères, in uncovering a large area here in 1888. The ancient city was walled, with towers about 80 feet apart. A large mound-shaped theatre was disclosed, a square market hall and paved roads of different eras. Consult Fougères, G., 'Mantinee et l'Arcadie Orientale' (Paris 1898).

**MANTIQUERA**, mân-tê-kâ-ê-râ, Serra Da, Brazil, a mountain range which is in the southeastern part of the republic. It is about 75 miles from the Atlantic and extends nearly parallel with the coast for about 200 miles. The eastern end is near Rio de Janeiro. Ranges connected with the Mantiqueira are often included with this range and the name Mitiqueira applied to the whole. Mount Itatiaia, the highest peak, is 9,700 feet above the sea. Several large rivers have their sources in this range.

**MANTIS**, an orthopterous insect of the family *Mantidae*. These curious insects, allied to grasshoppers, abound in many parts of the world, and have always excited popular notice, and have been endowed with many supernatural qualities by the ignorant and superstitious of all countries. They are slender, with long, locust-like legs, oval wings, and a long neck-like prothorax, terminating in an angular head with large protruding eyes. The front legs are stout, spiny, fitted for grasping their prey, and are held up in front of them in an attitude that to some suggest prayer. Hence the names praying insect, prophet and the like often given to the more familiar species; to others they suggest other ideas, as of a horse pawing the air, whence our common species of the Southern States (*Stegomantis carolina*) is known as the "rear-horse," and in Europe these insects are called "camel-cricket". Why it should also be called "mule-killer" is harder to explain; probably it is by confusion with a scorpion also

so called. These insects in tropical countries have come to assume various forms and hues similar to the flowers near which they lurk to catch the insects visiting the blossoms—a protective measure which comes under the head of mimicry. A large proportion of the insects upon which they feed are injurious to crops, so that they may be regarded as beneficial to man. Among the Japanese and Chinese they are made to minister to human amusement also, being kept in cages and made to engage in combats upon which the spectators bet money. The eggs of the mantis are laid in an oval mass upon the stem of a plant, and covered with a tough case of hardened mucus, which shows a curiously braided pattern of surface, and is easily recognized.

**MANTIS SHRIMP**, a large crustacean (*Squilla empusa*) of the order *Stomatopoda*, which dwells in burrows between tide-marks along our Eastern coast, and seizes marine worms, and the like, that come within its reach. Its general shape is shrimp-like, but it has strong claws on the second pair of legs, which much resemble the forelegs of a mantis (qv), are provided with sharp spines, and are so joined that they can be folded back upon themselves like the blade of a clasp-knife, and so take a firm grip upon the struggling captives. It is quite blind, although the eyes appear to be well formed. A well-known European species is gathered for food by the coast people.

**MANTLE**, (1) a kind of cloak or loose garment to be worn over other garments. (2) In heraldry the name is given to the cloak or mantle which is often represented behind the escutcheon. (3) A fabric-like covering of salts easily rendered incandescent, for placing over a gas flame to increase the light diffused. See GAS, ILLUMINATION.

**MANTLE ROCK**, also called **REGOLITH**, the loose unconsolidated debris that results from rock weathering. It includes all soils except those of strictly organic origin. If they have resulted from weathering in place, without removal, the soils are called residual; if they have been carried from their place of origin by wind, glaciers or running water, they are said to be transported. The mantle rock varies greatly in thickness. In some places it is entirely absent, in others it is hundreds of feet deep. See SOIL.

**MANTLING**, in heraldry, an ornament depicted as hanging down from the helmet, and behind the escutcheon. It is considered to represent either the countess, an ornamental scarf which passed around the body, and over the shoulder; or the military mantle, or robe of estate. When intended for the countess, it is cut into irregular strips and curls of the most capricious forms, whose contortions are supposed to indicate that it has been torn into that ragged condition in the field of battle. When the mantling is treated as a robe of estate, the bearings of the shield are sometimes embroidered on it. A mantling adjusted so as to form a background for the shield and its accessories constitutes an "achievement of arms."

**MANTRAPS**, engines for the terrifying of trespassers and poachers (formerly often indicated by the warning notice "man-traps and spring-guns set here"), resembled gigantic rat-

traps several feet long. They may be seen in museums, it has long been illegal to set them (save indoors between sunset and sunrise), as a defense against burglars.

**MANTUA**, măn'tū-ā, Italy, a fortified northern town, capital of the former duchy, and now of the department of Mantua, 80 miles by rail southeast of Milan, on an almost insular site on the Mincio, which here divides into several arms ending in a marshy and insalubrious lake. Communication is maintained between the islands and mainland by several bridges, the chief of which is Ponte di San Giorgio, 800 yards long. Mantua is written Mantova by the Italians; it is the see of a bishop, the seat of a civil, criminal and mercantile court, and the residence both of a military governor and of a provincial delegate. The most remarkable edifices are the cathedral, after an elegant design by Giulio Romano, the church of Saint Andrea, conspicuous from a distance by its majestic cupola and Gothic tower; the church of Santa Barbara, containing the mausoleum of Carlo Gonzaga; the church of San Sebastian; the Corte Reale, formerly the ducal palace of the Gonzagas, a huge irregular pile, now partly used as barracks; the Castello di Corte or old castle of the Gonzagas; the Torre della Gabbia, the Torre del Orologio, and the Torre dello Zuccaro; the Beccheria and Peschiera, or shambles and fish market, both built by Giulio Romano, the house of Giulio Romano, the Palazzo Colloredo, with enormous caryatides supporting its façade; the Palazzo del Té, outside the walls of the town, also built by Giulio Romano, and adorned with some of that master's largest frescoes; the Accademia Virgiliana di Scienze e Belle Arti; the Liceo, the military arsenal, two theatres, one called the Teatro Virgiliano, employed for open-air performances in summer, situated in a fine piazza also named after Virgil, and containing a marble pillar surmounted by a bronze bust of the poet, the library, containing 80,000 volumes; the civic and two foundling hospitals; the Monte di Pietà, the principal house of correction for the whole of Lombardy. The manufactures are increasing. The trade is chiefly in the hands of the Jews, who live in a separate quarter. The principal article of trade is silk. There are machine works, oil and flour mills, tanneries and breweries; there is also a considerable trade in timber, which is floated down the Mincio. Mantua was an ancient Etruscan settlement, and in the time of Virgil, a native of the region, was a Roman town. Charlemagne built its first fortifications. Soon after 1115 Mantua succeeded in making itself independent, and continued so till 1276, when it fell under the iron rule of Buonacolsi or Bonacossi. In 1328 it found better masters in the Gonzagas, who, first as captains, then (from 1432), as marquises, and finally (from 1530) as dukes of Mantua, governed it with great ability, and distinguished themselves by the splendor of their court and their patronage of literature and art. The last of the Gonzaga family who reigned in Mantua was Ferdinando Carlo, or Carlo IV, who, having taken part with the French in the War of Succession, was declared to have incurred a forfeiture by withdrawing his allegiance from his liege lord the emperor of Germany. The Mantuan territory was accordingly annexed to the Austrian possessions in Lombardy, and the re-

maining part of Montferrat was assigned to Savoy (1708). The fortifications of the town, previously formidable, were completed and put into their modern form by the Austrians and have been kept up to date by the Italian government. In 1796 Napoleon, apparently hopeless of reducing it by any other means, contented himself with keeping it under strict blockade, till famine compelled the garrison to capitulate. After the cession of the western part of Lombardy to Sardinia in 1859, Mantua, with what else of Lombardy remained to Austria, was united to Venetia, and with it was given up to Italy in 1866. The area of the department is 903 square miles, and the population (1921) 376,901. The communal population is 40,467.

**MANU**, mā'noo, the reputed author of the most renowned law-book of the ancient Hindus, and likewise of an ancient Kalpa work on Vedic rites. It is matter, however, of considerable doubt whether both works belong to the same individual, and whether the name Manu, especially in the case of the author of the law-book, was intended to designate a historical personage; for, in several passages of the Vedas (q.v.), as well as the Mahābhārata (q.v.), Manu is mentioned as the progenitor of the human race; and, in the first chapter of the law-book ascribed to him, he declares himself to have been produced by Virāj, an offspring of the Supreme Being, and to have created all this universe. Hindu mythology knows, moreover, a succession of Manus, each of whom created, in his own period, the world anew after it had perished at the end of a mundane age.

According to theosophy, the Manu is a great Being (though once a man) who governs the earth planet; other Manus govern other planets, while the Logos (q.v.) created the universe. The word Manu is chiefly used with reference to the author of an ancient renowned Hindu lawbook. This work is not merely a law-book in the European sense of the word, it is likewise a system of cosmogony; it propounds metaphysical doctrines, teaches the art of government, and, among other things, treats of the state of the soul after death. The chief topics of its 12 books are the following: (1) creation, (2) education and the duties of a pupil, or the first order; (3) marriage and the duties of a householder, or the second order; (4) means of subsistence and private morals; (5) diet, purification and the duties of women; (6) the duties of an anchorite and an ascetic, or the duties of the third and fourth orders; (7) government and the duties of a king and the military caste; (8) judicature and law, private and criminal; (9) continuation of the former and the duties of the commercial and servile castes; (10) mixed castes and the duties of the castes in time of distress; (11) penance and expiation; (12) transmigration and final beatitude.

Buhler has proved that Max Müller was right in regarding the extant work as a versified recast of an ancient law-book, the manual of a particular Vedic school, the Mānavas; and holds that the work, the date of which used to be given at 1200 B.C., was certainly extant in the 2d century A.D., and seems to have been composed between that date and the 2d century B.C. There are many remarkable correspondences between this work and the Mahābhārata, suggesting the use in both of common materials.

**MANUAL ACTS**, in ecclesiastical and Christian history, acts performed by the hands of the participant in the mass, chiefly the fraction of the host, and making the sign of the Cross over it before consecration. Both were objected to at the Reformation.

**MANUAL ALPHABET**, the deaf and dumb alphabet; the letters made by deaf and dumb persons with their fingers.

**MANUAL BLOCKING**. See **Block Signaling System**.

**MANUAL TRAINING**. As an educational term, manual training includes all handwork used as a means in general education. It differs from trade education through the apprenticeship system in that it emphasizes the educational element rather than the commercial or industrial element. This "hand-training," however, differs from education in its broader meaning, in that it emphasizes manual skill, and makes such by-products as judgment, accuracy, habits of observation, language, etc., more or less important incidents in the results to be attained. The more recent development of vocational training has tended to cast doubt upon the validity of manual training as a part of education, while the advocates of the traditional features of education—literature, history, mathematics, science, philosophy,—have never admitted it to a place in their educational scheme. The term has therefore become restricted to those forms of handwork which are used as agencies in general education as distinct from vocational, trade and industrial education. The manual training advocates continue to hold that habits of accuracy, judgment and observation and sincerity, formed through manual activities, will contribute to these same mental habits as permanent life characteristics. In this they return under peculiar circumstances to the doctrine of formal discipline, approaching the matter in reverse order from the early devotees to this doctrine. Nevertheless it is on this theory that manual training is now holding its place in American public education. When it surrenders this position it must become prevocational or vocational training.

**History of Manual Training.**—Finland holds the honor of the earliest use of handwork as an agency in education. Between 1858 and 1866 a plan was developed for teaching handwork in the primary schools, and for training handwork teachers for the public schools.

**Sweden** established handwork as a part of its educational system in 1872. This included carpentry, wood-turning, wood-carving, coopers' work, book-binding, etc., activities selected from the Hus Slöjd occupations from which we have the well-known "Sloyd Work." Sweden was concerned with the physical health of its people as well as the passing of the old system of house industries. It was hoped that this manual work would invigorate the physical and moral health of the people who lived under artificial city conditions; and that industry would be stimulated by a wide diffusion of manual skill. The Swedish nation has now made handwork an integral part of its public school program and has thus laid a broad and sure foundation for the excellent technical and trade schools above.

**France** adopted handwork in 1873 in the *École Salicis*, and in 1882 made such work compulsory in all elementary schools. From its

very beginning drawing has been emphasized and mathematics has been a closely related subject. Because of this academic work the French have drawn the regular teacher into the handwork movement side by side with a trade teacher who gives the practical work. This relationship between the academic teacher and the trade-teacher has been adopted by other countries and has apparently proved its usefulness.

**England** opened its first handwork classes in 1886 and to-day all the large centres of population require such work in their schools. The government awards special financial grants to municipalities who give manual training to boys and girls of 11 years and older.

**Germany** has long emphasized manual instruction for the artisan classes in her population but her emphasis has been on trade or vocational features. Skill of hand has been the purpose, rather than such moral qualities as were sought, for example, by the Swedish system. As a consequence Germany developed trade and occupation schools, rather than manual training courses in the "*real-schulen*." The Gymnasias of course give no training in handwork. In fact, there has been no general scheme adopted by any considerable portion of Germany. This is probably due to the fact that trade and occupational training were efficiently carried on. Recently, since 1887, some schools have adopted typical manual training courses, and the Manual Training Seminary at Leipzig is the principal source of manual training teachers within the Empire.

Manual training in the United States has depended on private and local initiative. There had been no national movement prior to 1917. The Ethical Culture Society of New York City made the first step by opening handwork classes for small children in 1878 in connection with its workingmen's school. This was followed in 1880 by Washington University, Saint Louis, Mo., under the direction of Calvin A. Woodward. This experiment consisted of a fully equipped manual training high school with a variety of shopwork in wood and metal, mechanical drawing, and in such appropriate academic work as science and mathematics. It was a pioneer school and its success was noticed by many of the large American cities. By 1900 a majority of American municipalities had adopted some form of manual training. Work for girls as well as boys was included in the program. The courses for girls included sewing, dressmaking, millinery, burnt wood, leather and art jewelry; for boys it included joinery, wood-turning, pattern-making, forging, machine-shop, foundry, sheet-metal, printing, electric wiring, etc. In the elementary school handwork has likewise found a large place on the program, beginning in the kindergarten and continuing through the elementary grades. The activities include paper folding and paper cutting, basketry, clay-modeling, wood-carving, raffia work, etc. Correlation with drawing is more and more the rule. The best practice in the public schools now relates drawing to the experiences of the child. Design is the basis of the work and the design of the drawing-class frequently becomes the project of the handwork-class in the upper grades. Manual training in the American high school early developed into a distinctive institution. Its handwork or shop-work program is only remotely



related to industry. The projects are often impractical because they are chosen, not because of their utility or industrial significance but because they illustrate fundamental processes of industry. Type constructions are used as analytical studies of various manufacturing processes. A complete product is not sought nor are such elements as time, commercial value and shop atmosphere made a part of the instruction. The purpose of this typical Manual Training High School is vaguely educational, remotely industrial. As such, it fails to meet the needs of many industrial communities.

**The Vocational Motive.**—A change of sentiment became apparent immediately after the Saint Louis Exposition of 1904. Educators who had investigated the subject in Europe and America, who saw the display of the nations' handwork, seemed to feel the need of training that related more closely to life motives. Manufacturers demanded industrial efficiency and appeared to have no confidence in the vague results of the typical Manual Training High School which was a traditional school with shop facilities. A demand arose for "shops with schools attached" or with school facilities. Manual training was soon modified so as to add the vocational appeal to boys and girls of 14 years of age and upward. The handwork of the seventh and eighth grades has come to be known as "prevocational" in the sense that the processes of many vocations are taught with the purpose of giving the child an opportunity to choose wisely with the aid of vocational advisers among teachers, parents and industrial or vocational experts. The logical step to follow this "prevocational" work is the trade school so that the advance of the vocational and industrial motives makes the old manual training ideal recede.

**Industrial Education and Manual Training.**—Industrial education is a more comprehensive term than manual training. It includes all that was at first expected from manual training as a stimulus to efficient workmanship; all that vocational and "prevocational" training propose; all that trade education seeks to secure. The emphasis is now on training and the specialized education pertaining to special industries, while the vague educational results of manual training which it was claimed would come by transfer of faculties, drop below the horizon.

Appreciation of the value of vocational education from the national standpoint was shown by the passage by Congress in 1914 of the Smith-Lever Bill, and in 1917 of the Smith-Hughes Bill. The former provided Federal co-operation with the States, chiefly along agricultural lines, while the former created a Federal Board of Vocational Education, and also provided for co-operation with the States in all branches of vocational training. After the World War the Federal Government provided, on a gigantic scale, facilities for vocational training for all honorably discharged soldiers who wished to take it. Up to 1 Nov. 1926, 179,674 veterans had taken this training, and of this number 127,348 had completed the courses. See EDUCATION, INDUSTRIAL; EDUCATION, TECHNICAL; VOCATIONAL EDUCATION.

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**MANUCODIA**, măn-u-co-dî-a, in ornithology, a group of birds either belonging or closely allied to the *Paradiseidae*, and peculiar to the Papuan sub-region. The plumage is glossy steel-blue; the outer and middle toes are united for some distance, and there is an extraordinary convolution of the trachea in the males, to which the loud and clear voice of the birds is owing. Mr. Sharpe divides the Manucodia into two genera: *Phonygama* and *Manucodia* proper, of which four species are admitted—*Manucodia chalybeata* (*chalybea*), from the northwest, and *M. comriei*, from the southwest, of New Guinea; *M. atra*, widely distributed over the Papuan sub-region, and *M. jobiensis*, peculiar to the island whence it derives its specific name.

**MANUEL I**, Comnenus, man'ū-ēl kōm-nē'nūs, a Byzantine emperor: b. about 1120; succeeded his father, Joannes II, in 1143, died in 1180. The valor which he had displayed against the Turks induced his father to bequeath the crown to him rather than to his elder brother Isaac, who was immediately imprisoned by Axuch, the minister of the deceased emperor. Returning from his campaign in Cilicia, Manuel was received with enthusiasm at Constantinople, but was at once involved in wars both in the East and the West, which lasted with brief intermissions through his reign. In 1144 he subjected Raymond, the rebellious Latin prince of Antioch. In 1145 he defeated the sultan of Iconium in successive pitched battles. In 1147 he promised his aid to the new crusade headed by Louis VII of France and Conrad III of Germany, and though he allowed them a passage through his dominions he gave secret information to the Turks.

In 1148 he began the most important war of his reign with Roger, the Norman king of Sicily, who had taken Corfu and prepared to invade Greece. He formed an alliance with the Venetians, who within a year joined him before the fortress of Corfu, which was surrendered after an obstinate siege. He was prevented from invading Sicily by hostilities of the Serbians and Hungarians, instigated by Roger, the former of whom were vanquished in two campaigns, but the latter protracted the war till 1152. In that year he suffered a reverse from the Turks in Cilicia, but his general, John Ducas, gained so great successes in southern Italy that Manuel conceived the project of reuniting the eastern and western empires.

The defeat of Alexis, the successor of John Ducas, by William, the successor of Roger, soon followed, the Sicilian admiral Maius routed the Greek fleet off Negropont, and advanced toward Constantinople; and Manuel therefore accepted an honorable peace in 1155. Those Greek prisoners who were silk-weavers were retained in Italy, and gave origin to the flourishing Italian silk manufactures. In the following years he waged successful wars with Raymond, Prince of Antioch, and Az-ed-din, the Turkish sultan. A new war soon broke out with Gejza, king of Hungary, which was terminated by a disastrous defeat of the Hungarians near the present Semlin. In 1176 he experienced a terrible defeat from Az-ed-din in the mountains of Pisidia, and was obliged to sign a disadvantageous peace. By breaking the treaty and renewing the war he

and his health. This broke his health and he died of a slow fever.

**MANUEL II**, Παλαεολογος, pá-lō-ō'lō-gūs, a Latin name, emperor of Greece in 1889, succeeded his father, George I, in 1891 and died in 1925. At the death of his father he fled from the court of the emperor, George I, with whom he had been left as a hostage. The consequence was a war with Bulgaria, in which Manuel was supported by an army of Hungarians, Germans and French. The army, under the command of Sigismund, king of Hungary and afterward emperor of Germany, were defeated at Nicopolis in 1906, with the loss of 100,000 men. Constantinople was besieged, and its fall seemed impending, when the conquests of Tamerlane diverted the arms of the sultan. Manuel visited Italy, France and Germany, vainly seeking assistance from the Western princes. In the conflict between the Tartars and the Turks, he acted with diplomatic skill, and secured peace to his empire. He sent ambassadors to the Council of Constantine with instructions to urge a union of the Latin and Greek churches; but his real object was only to obtain aid from the kingdoms of the West, and to alarm the Turks by the negotiations with those kingdoms.

**MANUEL II**, ex-king of Portugal, younger son of Carlos I: b Lisbon, 15 Nov 1889. He was known as the Duke of Beja and scandalous reports of his life in Paris were circulated before it was thought he would succeed to the throne. Consequently his accession on the assassination of his father and the Crown Prince on 1 Feb. 1908 was not the occasion of great popular rejoicing. He took the oath as king on 6 May 1908. His private life continued to alienate the affection of the people and on 5 Oct. 1910 the Republicans overturned his throne and proclaimed a republic. Manuel fled to England where he resided at Twickenham with his uncle, the Duke of Orléans. From there in 1911 he directed uprisings in Portugal with the object of abolishing the republic. These proved unsuccessful as did others in succeeding years and the entrance of Portugal into the war of 1914-18 as a member of the Entente appeared to put an end definitely to Royalist uprisings in that country despite huge sums spent by the Germans in propaganda to that end. Manuel married Princess Augustine Victoria of Hohenzollern-Sigmaringen in 1913; the union proved unhappy and a separation resulted. D. 2 July 1932.

**MANUEL**, Don Juan, Spanish prince and author: b Escalona, Spain, 5 May 1282; d. 1349. He was a nephew of Alfonso X, and cousin of Sancho IV. His public life was a restless and turbulent one, but his chief claim to remembrance comes from the fact that he was one of the first and one of the best of Spanish prose writers. He wrote in a style of singular simplicity and charm, and few Spanish authors have succeeded so well in giving to their words the calmness, the weight, the richness which come only from long experience and reflection. His principal work that remains is 'Libro de Patronio,' more commonly known as 'El Conde Lucanor,' which has been translated into the French and German languages.

**MANUFACTURERS**, National Association of, an American association organized in Cincinnati in 1895. It had three primary ob-

jects—increasing the export trade; influencing State and national legislation; and arbitrating labor disputes. The Association maintains a general office in New York City and issues numerous confidential reports and bulletins for the exclusive use of its members. The Association is opposed to all boycotts and blacking, but is not opposed to labor organizations, though it has resisted many of their rulings, and is popularly considered as antagonistic, because of the vigor with which it pushed the now famous suit against the American Federation of Labor, for its boycott of the Bucks Stove and Range Company. This was a long-fought test case, and the manufacturers won, stopping all official boycotting. For several years the association directed its attention against the Independent Workers of the World, with considerable success. The Manufacturers' Association has given considerable effort to promoting constructive legislation to aid manufacturers, and has made some gains in patent law, but signally failed in securing better terms from the Post-Office Department. It publishes *American Industries* (monthly), which has 35,000 circulation, and *The American Trade Index* (monthly).

**MANUFACTURES IN THE UNITED STATES**. See UNITED STATES, COMMERCIAL AND INDUSTRIAL DEVELOPMENT OF.

**MANUL**, ma'nūl, the common wildcat of Siberia and Tibet. It is smaller than the European wildcat, stockily built, has a moderately long tail and a coat of long hair. The general color is yellowish white, with a blackish mark on the chest and upper part of the fore legs, and some dark lines across the haunches and ringing the tail. Two black lines on the cheeks and a black spot behind the short ear are other distinguishing marks. There is a very curious similitude of appearance between this animal and the pampas cat of Patagonia.

**MANUMISSION**, in Roman law, the solemn ceremony by which a slave was emancipated. Constantine the Great allowed the Christian masters to emancipate their slaves before the altar on festival days, and especially at Easter, by placing the deed of emancipation on the head of the freedman in the presence of the congregation. See EMANCIPATION, EMANCIPATION IN LATIN AMERICA; EMANCIPATION PROCLAMATION.

**MANURES AND MANURING**. See AGRICULTURAL CHEMISTRY; FERTILIZERS.

**MANUSCRIPTS** (Latin, *manuscriptus*, written by the hand), are literally writing of any kind, whether on paper or any other material, in contradistinction to printed matter. Previous to the introduction of printing all literature was contained in manuscripts. All the existing ancient manuscripts are written on parchment or on paper. The paper is sometimes Egyptian (prepared from the real papyrus shrub), sometimes cotton or silk paper (*charta bombycina*), which was invented in the East about the year 706 A.D., and used till the introduction of linen paper, and in common with this till the middle of the 14th century; sometimes linen paper, the date of the invention of which, though ascribed to the first half of the 13th century, on the authority of a document of the year 1243, written on such paper, is

nevertheless exceedingly doubtful. The earliest mention of quill pens is in the 7th century. The most common ink is the black, which is very old. The oldest, however, was not mixed with vitriol, like ours, but generally consisted of soot, lamp-black, burned ivory, pulverized charcoal, etc. Red ink of a dazzling beauty is also found in ancient times in manuscripts. With it were written the initial letters, the first lines, and the titles, which were thence called *rubrics*, and the writer *rubricator*. More rarely, but still quite frequently, blue ink is found in ancient manuscripts; yet more rarely green and yellow. Gold and silver were also used for writing either whole manuscripts (which, from their costliness, are great rarities), or for adorning the initial letters of books. With respect to external form, manuscripts are divided into rolls (*volumina*, the most ancient way, in which the troubadours in France wrote their poems at a much later period) and into stitched books or volumes (properly *codices*). Among the ancients the writers of manuscripts were mainly freedmen or slaves (*scribæ librarii*). Some of the professional copyists in Rome were women. When Origen undertook the revision of the Old Testament (231 A.D.), Saint Ambrose sent to his assistance a number of deacons and virgins skilful in calligraphy. Subsequently the monks, among them the Benedictines in particular, were bound to this employment by the rules of their Order. In all the principal monasteries was a *scriptorium*, in which the *scriptor* or scribe could pursue his work in quiet, generally assisted by a *dictator*, who read aloud the text to be copied; the manuscript was then revised by a *corrector*, and afterward handed to the *miniator*, who added the ornamental capitals and artistic designs.

It is more difficult to form a correct judgment respecting the age of Greek manuscripts from the character of the writing than it is respecting that of Latin manuscripts. In general it is to be remarked that in a Greek manuscript the strokes are lighter, easier and more flowing the older it is, and that they become stiffer in the progress of time. The absence or presence of the Greek accents is in no respect decisive. Some Greek papyri are earlier than the Christian era, but most are not earlier than about the 6th century. The characters in Latin manuscripts have been classified partly according to their size (*majuscula*, *minuscula*), partly according to the various shapes and characters which they assumed among different nations or in various periods (*scriptura Romana antiqua*, *Merovingica*, *Longobardica*, *Carolingica*, etc.), to which has been added since the 12th century the *Gothic*, so called, which is an artificially pointed and angular character; and for all of those species of writing particular rules have been established, affording the means of estimating the age of a manuscript. Before the 8th century punctuation marks rarely occur: even after the introduction of punctuation, manuscripts may be met with destitute of points, but with the words separate. Manuscripts which have no capital or other divisions are always old. The *catch-word*, as it is termed, or the repetition of the first word of the following page at the end of the preceding, belongs to the 12th or subsequent centuries. The fewer and easier the abbreviations of a manuscript are the older it is. Finally, in the oldest manuscripts the words

commonly join each other without break or separation. The division of words first became general in the 9th century. The form of the Arabic ciphers, which are seldom found in manuscripts earlier than the first half of the 13th century, also assists in deciding the age of a manuscript. Some manuscripts have at the end a statement when, and commonly also by whom, they were written (*dated codices*). But this signature often denotes merely the time when the book was composed, or refers merely to a part of the manuscript, or is entirely spurious. The most ancient manuscripts still preserved are those written on papyrus which have been found in Egyptian tombs. Next to them in point of age are the Latin manuscripts found at Herculaneum, of which there is a rich collection in the Naples Museum. Then there are the manuscripts of the imperial era, among which are the Vatican Terence and Septuagint and the Biblical codices in the British Museum. Since the middle of the 19th century many manuscripts of Greek writings have been found in Egypt, among the chief being that containing the orations of Hyperides, several containing parts of the works of Homer, Plato, Demosthenes, etc., that in which occurs a portion of the Antiope of Euripides, and the almost complete text of Aristotle's work on the constitution of Athens. It was the custom in the Middle Ages to obliterate and erase writings on parchment for the purpose of writing on the materials anew, and these manuscripts, many of them of great value, are known as "palimpsests." This custom ceased in the 14th century, probably because paper came then more into use. See LIBRARIES; MANUSCRIPTS ILLUMINATED; MANUSCRIPTS OF THE BIBLE; PALEOGRAPHY; PAPYRUS.



**MANUSCRIPTS, ILLUMINATED**, are those whose text is heightened and brightened by vignettes and other decorations in colors, gold and silver. The verb to *illuminate* first occurs in the beginning of the

18th century; and means to decorate an initial letter, a word, or a text of a manuscript with gold, silver or brilliant colors, or with elaborate tracery, miniature illustrations and designs. The older verb was to *enluminer* (Old French *enluminer*; late Latin, *inluminare*; classic Latin, *illuminare*). It occurs, A.D. c. 1366, in Chaucer, A. B. C., 73, "Kalendeeres enlumined ben"; A.D. c. 1400, 'Roman de la Rose,' 1695, "For it so welle was enlomynd"; A.D. 1430, Lydgate, 'Chron. Troy,' Prol, "For he enlumineth by craft and cadence this noble storye with many freshe coloure of Rhetorik." Illumination differs from painting, according to Ruskin, 'Modern Painters' (1856, Vol. III, iv, viii, sec. 9), in that "illumination admits no shadows, but only gradations of pure colour." The earliest writing of many peoples was by means of pictures. Witness the pictographs of Sumeria, that later evolved into Babylonian cuneiform script; the hieroglyphic writing of Egypt; the crude scrawls of our American Indians; and

the Aztec picture-writing, which still defies epigraphists. It was but natural that an art ardent of embellishing these pictographs. Fifteen centuries before Christ the papyrus rolls that contain the ritualistic 'Book of the Dead' were illuminated with brilliantly colored scenes. In due time the art of illumination passed over to peoples whose script was alphabetic; it always remained an art of beautiful writing. There is truth, though characteristically narrow and dogmatic in expression, in the saying of Ruskin, 'Lectures on Art' (1870, v. 138): 'Perfect illumination is only writing made lovely; the moment it passes into picture making it has lost its dignity and function.'

### I. Illumination in the East. 1. In Egypt.

—The earliest specimens of illumination are on Egyptian papyrus rolls. Ritual directions are in red; hence the mediæval *rubric*. Profile portraits are inserted into the text. Agricultural and household scenes are interspersed between hieroglyphic signs. From the Egyptians the art of illumination reached the Hellenic folk of Alexandria. A 4th century B.C. papyrus manuscript of the poems of Timotheus, found at Abûsir, has a bird as a punctuation mark. Not until the Christian era do miniatures adorn the text. A 1st century A.D. Greek papyrus (Bibliothèque Nationale de Paris) shows a text that is adorned with miniatures in bold relief. A Berlin papyrus, Kaiser Friedrich Museum, illustrates the cure of a demoniac by Jesus. While in Hellenic Egypt the art of illumination thus progressed, the Coptic artists carried on a separate tradition from their ancient Egyptian forebears. A Coptic chronicle, dated 392 A.D. (Golenitscey collection) has a wealth of miniatures illustrative of the months, the provinces of Asia, the rulers of Rome, Lydia and Macedonia, together with the destruction of the Serapeum under the direction of the patriarch, Theophilus. The Morgan collection of Sahidic manuscripts, of the 9th and 10th centuries, contains a dozen manuscripts with miniatures of the Virgin and her Son, angels, martyrs, saints, hermits; and almost all of the 58 manuscript volumes of this remarkable Coptic library are illuminated with marginal decorative schemes of animals and plants.

2. In Syria.—The monks of Syria show the traditions of the Semitic orient in the illumination of manuscripts. Saint Augustine, 'Adv. Faustum' (xiii, 6, 18), refers to the miniature illustration of Persian parchments. From the 5th century, there were monastic schools for illumination in Mesopotamia and Syria. The Syriac Evangelist, 586 A.D., the work of Rabbula at Zagba in Mesopotamia, now in the Laurentian Library, Florence, is an exquisite work of art; the miniatures represent the Crucifixion, etc.; the marginal schemes are geometrical, and contain flowers, birds, etc. Some Hellenistic influence is noticeable; but Semitic traditions dominate in the Syriac school of illuminating. To this school belong also the extant Armenian illuminated manuscripts. Three evangelistaries, books of pericopic readings from the Epistles and Gospels, show the most beautiful work of Armenian miniaturists: that of Etschmiadzin, 10th century, copied from a 6th century model; that of Queen Milke, 902 A.D., Monastery of the Mechtarists, Venice; and the Tübingen Evangelistary, 1113 A.D. Mohammedan illumination copied Syriac in many Arabic, Turkish

and Persian manuscripts, chiefly of the Qûran. The decorative work is often rich in its red, blue and gold cufic characters.

3. The Byzantine School.—In the Hellenistic speaking parts of the Byzantine Empire, the traditions of ancient Greece held sway; although iconoclasm interfered for a while with the progress of miniature painting, and Syriac influences were strong. Previous to the destructive vandalism of the iconoclasts, Byzantine miniaturists beautified the great 6th century purple parchment, Biblical codices: L, *Vienna Genesis*, silver letters; N, *Cod. Purpureus*, silver letters, Gospels, most of manuscript at Petrograd; Z, *Cod. Rossanensis*, silver letters, Matthew and Mark, at Rossano, in Calabria; Zb, *Cod. Sinopensis*, gold letters, Matthew, in the Bibliothèque Nationale de Paris; Φ, *Cod. Beratinus*, Matthew and Mark, at Berat, Albania. These illuminated manuscripts contain Biblical scenes, the bearded face of the Christ, etc.,—all in miniature. To this period of Byzantine illumination belongs the 'Roll of Joshua,' 11 yards long, at the Vatican, which pictures the story of the great leader; and the manuscript of Dioscorides, at Vienna, 472 A.D., containing portraits of physicians that were copied from originals. All this early Byzantine illumination was along broad lines, free from stereotyped forms,—save the hieratic and fixed faces,—classic in artistic merit, brilliant in coloring, and profusely decorated with gold.

Iconoclasm during the 8th and 9th centuries wrought havoc to the art of illumination in the Byzantine Empire. Precious manuscripts were recklessly destroyed or ruthlessly mutilated. The artists of the iconoclastic period substituted ornamentation for miniature; flora, fauna and geometric forms for figure-painting. An instance of their work is the 'Evangelistary' at Bibliothèque Nationale de Paris, Gr. 631. The triumph of image-worship, 842 A.D., brought about a return to the painting of figures. The 10th to the 12th centuries were the most glorious period of Byzantine miniaturists. About 40 years after the restoration of image-worship, the 'Sermons of Saint Gregory of Nazianzen' (Bibliothèque Nationale de Paris, Gr. 510), 880 c. A.D., were executed, and embellished by a series of large, beautiful miniatures. The 'Paris Psalter,' dating from the 10th century (Bibliothèque Nationale de Paris, Gr. 139), has scenes of the life of David, reproduced from 3d or 4th century models, that vie with the frescoes of Pompeii in freshness and brilliancy. The 'Homilies of Saint John Chrysostom,' Paris, a manuscript which belonged to Nicephorus III (1078-81 A.D.) is likewise a good example of Byzantine illumination at its maturity. The Psalter and the Menologion, a brief sketch of the lives of the saints for each day, were at this time most frequently decorated. The 'Vatican Psalter' (1059 A.D.), in the Barberini Library; and the Menologion of Basil II (976-1025 A.D.) in the Vatican, are rich in miniatures of brilliant coloring. Here should be mentioned the Slavic school of illumination. It was Byzantine at first; and gave us the 'Chloudov Psalter,' 9th century, at Moscow. Between the 12th and 16th centuries, a national style appeared, which is characteristic of many of the numerous and richly illumined manuscripts of the libraries and museums of Petrograd and Moscow.

MANUSCRIPTS, ILLUMINATED

ī Deū vt sibi con



Letter S illuminated. Italian (Verona). Early 15th century



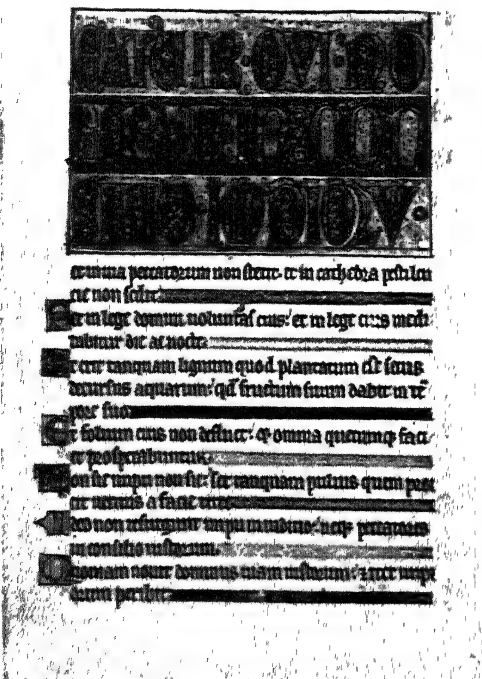
Courtesy, The Metropolitan Museum of Art  
Letter M illuminated Italian. 14th century.



# MANUSCRIPTS, ILLUMINATED



Two leaves from antiphony Italian 15th century



First page of Psalter. French. 13th century



Courtesy, The Metropolitan Museum of Art  
Letter D illuminated. French. 15th century.

## II. Illumination in the West. 1. Early

**Italian.**—As manuscript writing, so illumination began in the East, and was thence taken over by the West. Pliny, 'Historia Naturalis' (xxv, 8) is witness to miniature-painting in Rome during the 1st century B.C. Martial (xiv, 1865) speaks of a parchment containing a portrait of Virgil. Varro had some 700 such miniature portraits. The most ancient illuminated manuscripts probably of western provenance are the fragmentary 'Iliad,' 3d century, Ambrosian Library, Milan; the Vatican Virgil, the 'Schedæ Vaticanæ,' 4th century, Vat. Lat. 3225, with 50 miniatures; the 'Codex Romanus,' another Vatican Virgil. Here be it noted that Latin illuminators gave us the word *miniature*,—from the Latin *minium*, which means red lead or cinnabar,—the vivid-red lead oxide used as a pigment. Hence also is *minare*, to paint in miniature; together with *miniator*, the miniature-painter. Early Italian illumination is not very well known to the historian of art. Byzantine art reacted on Italian, and this reaction is marked in mosaics, early Italian painting, and the earliest illumination of manuscripts in southern and central Italy. Through Italy, the East influenced the illuminators of the Frankish Empire.

**2. Celtic Illumination.**—It was during this period of decline of illumination in the West that the Irish school, as early as the 7th century, broke completely away from the copying of ancient models and inaugurated its own style of book-ornamentation. The individuality of the artists, the civilization and character of their race, were expressed in an art that reached the very height of perfection and made its influence felt in continental Europe. The Celtic initials, margins, and full-page designs are easily recognized by their great intricacy of interlacing spirals, zigzags, and ribbons, that entangle animal and human shaped fancies, knots, and other designs,—all executed with a marvelous precision of mathematical accuracy, graceful delineation, delicate touch, brilliant coloring, and most fecund imagination. Irish illumination is decidedly oriental in conception and execution; and seems to point back to the ancient civilization of the race, before the Celtic migration from the steppes of Asia, across Asia Minor, by way of Austria, Switzerland, Spain and France. No trace is found of classic influences. Foliage is absent. Kinship with the sculpture on stone and jewels in barbaric Ireland is marked. The wonderful decorative schemes are more like to the Arabic than to any other; and the human form is depicted with a geometrical symmetry that is characteristic of Coptic workmanship. The finest example of Celtic illumination is in Q, 'Codex Kenanensis,' the Book of Kells, 8th century, Vulgate Gospels, in Trinity College, Dublin. Its pages are replete with brilliant, exquisite designs, testifying to a minuteness and delicacy of precision that are a marvel to art critics. The Celtic art of illumination reached Iona through Saint Columba's foundation there; and the monks of Iona (635 A.D.) brought their faith and their art to Lindisfarne, or Holy Isle, off the Northumbrian coast. Here was executed in Celtic style the 'Lindisfarne Gospels,' 8th century, now in the Cottonian collection of the British Museum. Other fine works

of the Celtic school of illuminators are the 'Book of Deer'; A, 'Codex Sangallensis,' 9th or 10th century, Gospels in Greek and Latin, at Saint Gall, Switzerland. In England, the Celtic school of illumination dominated, although manuscripts brought by Saint Augustine from Rome introduced a classic influence. The 'Utrecht Psalter' (800 A.D.) is representative of the Celtic style in transition. It shows crude attempts at drapery effects. In Anglo-Saxon miniatures, frames of foliage and fluttering draperies become characteristic. The 'Benedictionale' of the see of Devonshire is the most elaborate specimen of 10th century Anglo-Saxon miniatures. The Norman Conquest saved Anglo-Saxon illumination from the fantastic exaggerations into which it was sinking.

**3. Carolingian Illumination.**—When Charlemagne became emperor of the West (800 A.D.) illumination was rapidly revived. The Celtic style provided to this new school its interlacements; Byzantine art was drawn upon for the painting of the human figure. Gold was used profusely in letters as well as illustrations. Large initials were almost the rule. Ornamentation was luxurious. Miniatures represented historical characters, symbolical themes, the arts, signs of the zodiac, virtues, vices, etc. Notwithstanding the gorgeous effect of purple vellum, a dazzling abundance of gold, and a brilliance of decoration, the Carolingian illuminated manuscripts show a tendency to coarseness of workmanship and clumsiness of figure-painting. This tendency is in part offset by the purer style of the Celtic influence. The best examples of early Carolingian illumination are: the 'Evangelary,' said to have been illuminated by Godescalc for Charlemagne in 787 A.D., whose text is in gold letters on a purple ground, and whose every page is illustrated with a different decorative scheme; another 'Evangelary' of Charlemagne, at Vienna; the 'Bible of Theodulf,' bishop of Orleans, at Paris and Le Puy; the 'Sacramentary,' written for Drogon, son of Charlemagne and bishop of Metz; the 'Evangelary of Lothair,' Paris; and the 'Bible of Charles the Bald,' presented by Count Vivien, abbot of Saint Martin of Tours. It was about the time of Charles the Bald, second half of the 9th century, that Carolingian illumination reached its greatest perfection.

**4. Gothic Illumination.**—The 10th to the 12th centuries show a decadence of Frankish illumination. After the 'Regensburg Gospels' (11th century) miniatures become more coarse and clumsy, colors are dull. Toward the end of the 12th century, a renaissance of illumination is visible in both Germany and France. Gold is now laid on in leaf, and not in liquid; burnishing makes the illumination most brilliant. The old illuminators were monks; now laymen take up the art. The initials are smaller, but more artistic; they often contain miniatures of illustration or interpretation of the Biblical text. Hundreds of miniatures beautify the 'Picture Bibles' of the 13th century, or interpret the 'Sermon Bibles' of the period. Gothic features are introduced,—gables, pinnacles, rose and quatrefoil decorations. The human figure is painted with realism; 13th century costumes are preserved to us in an accuracy of coloring. During the 14th century, there is a departure

from portrait, floral, and a reproduction of actual objects were common nature. And with the latter were included peasants, birds, animals, flowers, etc.—all true to life. The *Manuscript of the Bible* (Bibliothèque Nationale de Paris, Lat. 10483-4) the work of the famous French illuminator, Jean Pucelle, together with Mabius Ancelet and J. Chevrier; the *Book of the Miracles of Our Lady*, 15th century, by Mary's Psalter (British Museum), done for Mary Tudor, are all excellent works of 14th century craft. The golden age of illumination continues during the early 15th century. Even at the outset of the Renaissance, the Gothic manner prevails. Books of Hours are the special feature. Such is the *Tres Riches Heures* of the Duke of Burgundy, Musée Condé, Chantilly, by Pol de Limbourg, containing miniatures of the various châteaux of the duke, and portraying marvelous aerial perspectives in landscape scenery,—the effects of snow, starlight, blazing sunlight and dull autumn shades. Other beautiful Hours are the *Grandes Heures*, by Jacquemart de Hesdin; *Tres Belles Heures*, and *Heures de Turin*, of the same Flemish school; and the *Hours of Anne of Brittany* (1508 A.D.). This last work marks the end of the art of illumination. The Renaissance, together with the invention of printing, were fatal to miniature painting of books, and to the illumination of their carefully written pages.

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**MANUSCRIPTS OF THE BIBLE** are written as opposed to printed copies of the whole Bible or a part thereof. All these manuscripts, whether of the original text or of an ancient version, so long as they were done before the invention of the art of printing, are important in the science of the textual criticism of Holy Writ. This article will contain a brief introduction on Bible manuscripts in general, followed by a summary account of the chief Hebrew, Greek, Latin, Syriac, Armenian and Coptic manuscripts of the Bible. Manuscripts of the Arabic, Ethiopic, Slavic and other early versions of Scripture do not witness to the earliest type of New Testament text; they are amply treated in technical dictionaries of the Bible.

**I. Bible Manuscripts in General.**—There are three classes of Bible manuscripts—papyrus, vellum and palimpsest—to which attention should be called.

**1. Papyrus Manuscripts.**—While Babylonian scribes were impressing upon enduring clay the cuneiform, or wedge-shaped, ideographic records of the style, Egyptian reed-writing with ink upon papyrus developed almost at the same pace. The name of this primitive paper is that of the plant which provided its raw material. The papyrus, *πάπυρος*, probably

an Egyptian loan-word,—was a rush of thick triangular stalk.

Its main root, Theophrastus tells us, was about 15 feet long and as thick as a man's wrist. Likely the bullrush, *gómér*, the wicker out of which was plaited the ark that contained the infant Moses, was the Nile papyrus. The outer coat of this Egyptian water-plant was peeled off, the pith was cut into strips and these were glued together transversely to form the first known writing paper. Sheets of papyrus were very fragile, became brittle in air, crumbled with use, could not resist the disintegrating force of moisture and were quite impracticable in book-form. Hence all papyrus manuscripts have been lost to us, save such as were buried in the exceedingly dry soil of Upper and Middle Egypt. For many years, the ignorant *jellâhîn* wantonly destroyed these precious records of the past. Now scientific excavators are preventing this ruthlessness, and constantly adding to the world's various collections of papyrus manuscripts. The most ancient papyrus document is a record of the reign of the Egyptian King Assa, B.C. 3580-3536; and the earliest literary papyrus work extant is the *Prisse papyrus* of Paris, written in the 5th dynasty, c. B.C. 2500. During the first three centuries of Christianity papyrus was the ordinary writing paper of the Roman Empire. It was used by the Arabs until the 8th century, when modern paper was invented. The sacred writers or their scribes most likely used ink and rolls of fragile papyrus for the *autographa* of the New Testament (2 Corinthians iii, 8, 2 John, xii). These precious documents seem to have perished during the early 2d century. No trace of them is found in the writings of either the Apostolic or Apologetic Fathers,—unless we except Tertullian's words, "the authentic letters of the Apostles themselves," which are now generally set aside as rhetorical.

**Bibliography.**—Deissmann, 'Bible Studies' (1901), 'Light from the Ancient East' (1910); Moulton, 'Grammar of New Testament Greek' (Vol. I, 3d ed., 1908); Milligan, 'The New Testament Documents' (1913); Moulton and Milligan, 'Vocabulary of the Greek New Testament illustrated from the papyri and other non-literary sources' (parts 1 and 2, 1914-15).

**2. Vellum Manuscripts.**—Pliny ('*Historia Naturalis*' xiii, 1) is witness to the use of vellum for documentary purpose before the time of Christ. Saint Paul (2 Timothy iv, 13) employed both papyrus-rolls, *τάβηλα*, and parchment, *μεμβράνας*. In the 3d century, vellum began, outside of Egypt, to supersede papyrus; and in the early 4th century, the codex or parchment book-form gained complete victory over the papyrus-roll. To this century belong the earliest extant Bible manuscripts of any thing but fragmentary size.

**3. Palimpsests.**—Some of our most important vellum manuscripts are palimpsests (—Lat. *palimpsestum*, *παλινψηστός* "scraped again" i.e., manuscripts that were scraped a second time with pumice-stone and written upon anew). The reckless charge of wholesale destruction of Biblical manuscripts by the monastic scribes of palimpsest works has not been substantiated. Wattenbach ('*Das Schriftwesen im Mittelalter*' 1896, pp. 299 ff), a leading authority on the subject, notes that a Greek synod, A.D. 691, forbade the use of any but ut-

terly unserviceable Biblical or Patristic manuscripts for palimpsest-writing. According to Warrenbach, "more precious manuscripts, in proportion to the existing supply, have been destroyed by the learned experimenters of our time than by the much abused monks of old." The deciphering of a palimpsest may at times be accomplished by merely soaking it in clear water. The "learned experimenters" use some chemical reagent, in order to bring back the original writing. Such chemical reagents are an infusion of nutgalls, Gioberti's tincture and hydrosulphuret of ammonia; all do harm to the manuscripts.

**II. Hebrew Manuscripts.**—Certain parts of the Hebrew Bible,—Daniel ii, 4b-vii, 28, and Ezra iv, 8-vi, 18, together with vii, 12-26,—are not in Hebrew, but in Aramaic. These Biblical Aramaic portions, in the language that the exiled Jews adopted during their Babylonian captivity (B.C. 586-536), are here treated conjointly with the Hebrew text into which they have been received. We shall briefly sum up the age, number and worth of the Hebrew manuscripts of the Bible.

1° *Age*—Textual criticism divides the Hebrew text of the Bible into the Masoretic and pre-Masoretic.

The Masoretic text is that of our complete Hebrew manuscripts. It represents the Masorah. This authoritative textual tradition was begun in the 1st century B.C.; was fixed in its consonantal readings during the Talmudic period (A.D. 300-500); and received the vowel points about the 8th century of our era. The pre-Masoretic text includes chiefly the readings that are not witnessed to by Masorah. The earliest manuscript of the Hebrew Bible, and probably the oldest extant Biblical manuscript, is the Nash papyrus. There are four fragments, which, when pieced together, give 24 lines of a pre-Masoretic text of the 10 commandments and of the *shemâ* (Exod. xx, 2-17, Deut. v, 6-19, and vi, 4-5). The writing is without vowels, and seems paleographically to belong to not later than the 2d century. Another witness to the pre-Masoretic text is the Samaritan Pentateuch, which is probably pre-exilic in origin. The earliest Samaritan manuscript extant is that of Nablus, once rated very ancient and now assigned to the 12th or the 13th century. The newly-discovered Hebrew '*Ecclesiasticus*,' represented by fragmentary manuscripts of the 10th or 11th century, preserves parts of the pre-Masoretic text of a book until recently thought to have been written in Hellenistic.

All other Hebrew manuscripts of the Bible are Masoretic, and belong to the 10th century or later. At most 9 or 10 are earlier than the 12th century. The earliest are *Codex Petropolitanus*, dated A.D. 916; the *Saint Petersburg Bible*, dated A.D. 1009; and *Codex Oriental*, 4445, British Museum, which Ginsburg assigns to A.D. 820-850.

2° *Number*.—Kennicott ('*Dissertatio Generalis in Vetus Testamentum Hebraicum*,' 1780), collated 16 Samaritan and 638 Masoretic manuscripts. De Ross; ('*Variae Lectiones*,' 1784), brought the number of Masoretic manuscripts up to 1,375. No one has since surpassed this critical work of De Rossi on the Masoretic text. Some 2,000 Masoretic manuscripts gathered in the Crimea by Firkowitsch,

await critical study in the Imperial Library of Petrograd. Consult Strack, '*Die biblischen und massoretischen Handschriften zu Tschufut-Kale*' (In *Zeits. für luth. Theol. und Kirche*, 1875).

3° *Worth*.—This rich store of some 3,375 manuscripts promises no very important critical results. For they all depend on an archetype of the 2d century A.D., and are singularly alike in accuracy of reproduction. The Masoretes were most detailed in their painstaking efforts to hand down the text of this archetype. The Scribes counted words and consonants of each book; noted the middle words and middle consonants; retained peculiarities of script,—such as broken letters, inversions, consonants that were too small or too large, dots out of place, etc. All these oddities were handed down as God intended, and received mystical interpretations. Here is an instance. In Genesis ii, 4, *behibbâre' am*, "when they were created," the letter *h* is unduly small. The rabbis handed down this peculiarity as God inspired; translated the word, "In the letter *h* he created them"; and then disputed what that meant. Hence the importance of manuscripts of the early versions of the Old Testament, so as to reach a pre-Masoretic text.

**Bibliography.**—Kraft and Deutsch, '*Die handschriftl. hebraischen Werke der k. k. Hofbibliothek*' (1837); Strack and Harkavy, '*Catalog der hebr. Bibelhandschriften der kaiserlichen Bibliothek*' (1875); Schiller-Szinessy, '*Catalogue of the Hebrew Manuscripts*' (preserved in the University Library, 1876) Assemani, '*Bibliotheca Apostolicae Vaticanae Codices Orientales*' (1756); Mai, '*Appendix to Assemani*' (1831); Neubauer, '*Facsimiles of Hebrew Manuscripts in the Bodleian Library*' (1886), and '*Catalogue of the Hebrew Manuscripts in the Bodleian Library and in the College Libraries of Oxford*' (1886).

**III. Greek Manuscripts.**—Textual critics divide Greek manuscripts of the Bible into uncials and minuscules. Uncial manuscripts are written in large disconnected letters that vary in force so as to indicate the time and place of provenance. Words are not separated; accents and punctuation marks are not used; no great variety of script is admitted; ligatures are employed for the most ordinary words; paragraphs are marked off by small lacunas. The decadence of elegant uncial writing begins in the 6th century; twists and turns are given to certain letters. In the 7th century manuscripts still greater freedom of flourish is allowed the scribe; accents and breathings are introduced, and the script leans to the right. By the 10th century the writing in Biblical manuscripts begins to be more or less cursive; these manuscripts are called minuscules. The letters are now small, connected and written with a running hand. Cursive writing holds sway in Biblical manuscripts until the 16th century. In A.D. 1514, the Greek New Testament was for the first time printed.

1° *Old Testament Greek Manuscripts*.—Traces of the version of Aquila (c. A.D. 130) are found in: (1) fragments of Origen's third columns, written as marginal notes to some manuscripts of the Septuagint; (2) the Milan palimpsest of the Hexapla, a 10th century copy found by Mercati in 1896, containing about 11 psalms; (3) the Cambridge fragment,

7th century, giving parts of Psalm xxi—Cf. Taylor, 'Cairo Geniza Palimpsests' (1909, 14) the Cairo fragments of the 4th and 5th centuries: three palimpsests (containing 1 Kings ix, 7-17, 2 Kings xxi, 11-27), published by Burkitt in 1897; also four portions of the Psalms (89-17—91-10, 95-7—96-12, 98-3, 101-25—102-13) published by Taylor (op. cit.); (5) the 4th century papyrus fragments of Genesis i, 1-5, published by Grenfell and Hunt in 1900. Our few manuscript traces of the versions, which Symmachus and Theodotion issued toward the end of the 2d century, may be found in the same Hexaplaric fragments that witness to the text of Aquila. Theodotion's Daniel is preserved in the Septuagint manuscripts.

The Septuagint version of the Old Testament is extant in many manuscripts. These represent three textual families,—the Hexaplaric, Hesychian and Lucianic. The Hexaplaric text takes its name from the Hexapla of Origen. This colossal critical work, completed c. A.D. 240, presented in six columns the Hebrew text, the Greek transliteration thereof, Aquila, Symmachus, the Septuagint and Theodotion; and, for certain books, two other Greek translations that are named *Quinta* and *Sexta*. Pamphilus, a disciple of Origen, preserved manuscripts of the Hexapla at Cæsarea. In the 4th century, Pamphilus and his disciple, Eusebius of Cæsarea, reproduced the fifth column,—i.e., Origen's Hexaplaric Septuagint text,—together with all its critical signs. By these critical signs, Origen had marked off passages, which he had found wanting in the Septuagint and had supplied from either Aquila or Theodotion. Unfortunately the scribes were not faithful in handing down the critical signs of Origen. In this wise the Cæsarean text of the Septuagint was evolved into a hopeless commingling of Origen's Septuagint together with his interpolations from Aquila and Theodotion. Meantime two other editions of the Septuagint got a vogue,—those of Hesychius at Alexandria and of Lucian at Antioch. From these three editions of the Septuagint text, all of our extant manuscripts are descended, but by ways that have not yet been accurately traced. The Hexaplaric, Hesychian and Lucianic texts acted and reacted upon each other. The result is that most of the extant manuscripts of the Septuagint contain readings from each of the three textual families. Criticism is at work to trace the respective influences of each text upon the manuscripts now to hand. Consult Field, 'Origenis Hexaplorum quæ supersunt, sive veterum interpretum Græcorum in totum Vetus Testamentum fragmenta' (1875).

*A. Papyrus Manuscripts.*—About 40 papyrus manuscripts of parts of the Septuagint have been found in recent years. Of these the most important are (1) *Oxyrhynchus Pap.* 656, early 3d century, preserving parts of Gen. xiv-xxvii, wherein most of the great vellum manuscripts are defective; (2) *British Museum Pap.* 73, called U, 7th century, Psalms 10-33; (3) a *Leipzig Papyrus*, 4th century, Psalms 29-54; (4) a *Heidelberg Papyrus*, 7th century, Zachary iv, 6—Malachi iv, 5; (5) a *Berlin Papyrus*, 4th or 5th century, containing some 30 chapters of Genesis.

*B. Vellum Uncial Manuscripts.*—Parsons 'Vetus Testamentum Græcum cum Variis Lec-

tionibus,' 1798), designated uncial manuscripts of the Septuagint by Roman numerals, minuscule by Arabic. Lagarde inaugurated the now common usage of Roman and Greek capitals for uncials. Von Soden's system of manuscript symbols, though illuminating, has not been widely adopted. The important vellum uncials of the Septuagint text are here subjoined.

*Aleph, Cod Sinaiticus* (c. 350), 43 leaves at Leipzig, 156 together with New Testament at Petrograd; contains fragments of Genesis and Numbers, 1 Paral. 9-27—19-17, Esdr. 9-9 to end, Esth., Tob., Judith, 1 and 4 Mach., Isa., Jer., Lam. (in part), Joel, Abd-Mal., the Poetical Books, the entire New Testament, Epistle of Barnabas, and part of 'Shepherd of Hermas'. The text is mixed; in Tobit it widely differs from A and B. Two correctors are of the 7th century. The first writes, at the end of Esther, that he compared the manuscript with a copy of the Hexaplaric text, authenticated by Pamphilus.

*A, Cod Alexandrinus*, 5th century, in British Museum, complete Bible (excepting Psalms 50-20—80-11 and smaller lacunæ); includes deuterocanonical books and fragments, apocryphal 3 and 4 Mach., also 1 and 2 Clement, of Egyptian provenance, and likely Hesychian in text; differs much from B, especially in Judges.

*B, Cod Vaticanus*, c. 350, in Vatican Library, complete Bible; the Old Testament lacks Gen. i-xlvi, 28, 1 and 2 Mach., parts of 2 Kings ii, Psalms 105-137; the New Testament lacks Hebr. 9-14, 1 and 2 Timothy, Titus, Apoc; provenance, Lower Egypt; text deemed by Hort to be akin to the Hexaplaric.

*C, Cod Ephræm*, 5th century palimpsest, in National Library, Paris; 64 leaves of Old Testament, 145 out of 238 leaves of New Testament.

*D, Cotton Genesis*, 5th century, British Museum; fragments of Genesis; almost destroyed by fire in 1731, but previously collated.

*E, Cod Bezae Cantabrigiæ*, 9th or 10th century, Bodleian Library, Oxford, Heptateuch, fragments.

*Q, Cod Marchalianus*, 6th century, Vatican, Prophets complete; provenance, Egypt; text, Hesychian; marginal notes from Hexapla contain Hexaplaric signs.

*Theta, Cod Washington*, 5th or 6th century Smithsonian Institution, Deuteronomy to Joshua.

Among uncial manuscripts of the Septuagint are also listed 17 codices, some of the 5th and 6th century; seven Psalters of the 9th or 10th century; and 18 fragments.

*C. Vellum Minuscule Manuscripts.*—More than 300 are known but not classified. Few bear witness to the entire Old Testament; the greater part are Psalters. The most critical use of the minuscules of the Septuagint is evidenced by Brooke and McLean, 'The Old Testament in Greek' (Vol. I, *The Octateuch*, 1906-17).

*Bibliography.*—Swete, 'Introduction to the Old Testament in Greek' (1900), and 'The Old Test. in Greek' (3d ed. of Vols. I and II, 1907; 4th ed. of Vol. III, 1912); Kenyon, 'Our Bible and the Ancient Manuscripts' (1898); Nestle, 'Septuagintastudien' (1886-1907).

*2. New Testament Greek Manuscripts.*—According to Von Soden ('Die Schriften des Neuen Testaments in ihrer ältesten erreichbaren



Textgestalt,' 1902), 2,328 Greek New Testament manuscripts are extant; only about 40 contain, either entire or in part, all the books; 1,716 are of the Gospels, 531 of Acts, 628 of the Pauline Epistles, 219 of Apocalypse.

*A Papyrus*—About 31 papyrus fragments, of which six belong to the 3d century, bear most important witness to parts of 12 books of the New Testament. Consult Milligan, 'Greek Papyri' (1912), and 'The New Testament Documents' (1913).

*B Vellum Uncials*—Besides Aleph, A, B, C, already described, there are some 160 vellum uncials of the New Testament; 110 contain the Gospels or a part thereof. The most important of these manuscripts are:

D, *Cod Beza*, 5th or 6th century, Cambridge; Gospels and Acts in Greek and Latin, excepting Acts xxii, 29 to end; text, Western, i.e., that of Old Latin and Old Syriac.

D<sub>a</sub>, *Cod Claromontanus*, 6th century, Nat. Libr., Paris; Pauline Epistles in Greek and Latin, each independent of the other.

E, *Cod. Basileensis*, 8th century; Univ. Libr., Basle, Gospels.

E<sub>a</sub>, *Cod. Laudianus*, 6th century, Oxford, in Bodleian Libr., Acts in Greek and Latin, same text as D.

E<sub>a</sub>, *Cod Sangermanensis*, 9th century, Imper. Libr., Petrograd, Pauline Epistles in Greek and Latin, same family as D<sub>a</sub>, E<sub>a</sub>, G<sub>a</sub>.

F, *Cod. Boreeli*, 9th century, Utrecht, Gospels.

F<sub>a</sub>, *Cod Augiensis*, 9th century, Trinity Col., Cambridge, Pauline Epistles in Greek and Latin, same family as D<sub>a</sub>, E<sub>a</sub>, G<sub>a</sub>.

G, *Cod Wolfii*, 9th century, Cambridge and London, Gospels.

G<sub>a</sub>, *Cod Bærnerianus*, 9th century, Dresden, Pauline Epistles in Greek and Latin.

Washington Manuscripts, called W and I by Gregory, giving a 5th or 6th century text of Gospels and Pauline Epistles, Smithsonian Institution.

*C Vellum Minuscules*.—The vast number of minuscule witnesses to the New Testament text would seem to indicate a rich field of research for the critic. Such is not the case. Ninety-five per cent of these manuscripts are of little moment; they represent an inferior type of text,—that called the *textus receptus*. Only those minuscules attract attention which approach to one of the great uncials. Thus the "Ferrar Group" resemble the text of D.

**Bibliography.**—Kenyon, 'Textual Criticism of the New Testament' (1912), and 'Paleography of Greek Papyri' (1899); Warfield, 'Textual Criticism of the New Testament' (1886); Tischendorf, 'Novum Testamentum Græce' (1869), together with Gregory's *Prolegomena* thereto (1894); Gregory, 'Canon and Text of the New Testament' (1907); 'Textkritik des Neuen Testaments' (1909), and 'Die Griechischen Handschriften des Neuen Testaments' (1908); Von Soden, 'Griechisches Neues Testament' (1913), and 'Die Schriften des Neuen Testaments' (4 vols., 1911-13); Nestle, 'Textual Criticism of the Greek Testament' (1901); Hutton, 'Atlas of Textual Criticism' (1911).

**IV. Latin Manuscripts.**—Epigraphists find far greater variety of script in Latin than in Greek manuscripts. Hence the former are di-

vided into uncials, semi-uncials, capitals, minuscules and cursives; and these divisions are subdivided. The time, place and even the monastery of the copyist may often be traced by the very distinct script of the text.

1°. *Old Latin Manuscripts*.—The origin of the Old Latin text is wrapped in obscurity. Three distinct types are recognized,—the African, European and Italian. The African text is that used by Tertullian (c. 150-220), and Saint Cyprian (c. 200-258); it is the crudest in style, and apparently the earliest to be made. The European text is less crude in style and vocabulary; and may be an independent translation. The Italian text, probably the *Itala* which Saint Augustine preferred to all others, is the version used by Saint Jerome in his revision. About 40 manuscripts preserve this pre-Hieronymian Latin text,—27 manuscripts of Gospels, seven manuscripts of Acts, six manuscripts of Paul's Epistles, fragments of Catholic Epistles and Apocalypse. All show the influence of the Vulgate or of corrections made by scribes. The most important Old Latin manuscripts are the bilinguals already noted: D, D<sub>a</sub>, E<sub>a</sub>, E<sub>a</sub>, F<sub>a</sub>, G<sub>a</sub>. Besides there are the codices *Vercellensis*, 4th century; *Veronensis*, 5th century; *Palatinus*, 5th century; *Brixianus*, 6th century; *Corbeiensis*, 5th century; *Gigas*, 13th century; *Palimpsest de Fleury*, 6th century; *Bobiensis*, 4th century. Cf. Burditt, 'The Old Latin and the Itala' (1896); Wordsworth, Sanday and White, 'Old Latin Biblical Texts' (1883-97); Buchanan, 'Old Latin Biblical Texts' (1907-11) and 'Sacred Latin Texts' (1912-14).

2°. *Vulgate Manuscripts*.—More than 8,000 manuscripts of the Vulgate are extant, most of which are later than the 12th century and of little use in the reconstruction of the sacred text. Wordsworth and White, in their critical text (1889-1905), collate 40 of the most important Vulgate manuscripts. The Benedictine Commission for the Revision of the Vulgate, established by Pope Pius X, is at work on the collation of this vast store of manuscripts; its task is to reconstruct the various families of the Vulgate text,—the Spanish, Italian, Irish, French, etc.,—to sift out the Old Latin readings and other interpolations, and to reach back as nearly as possible to the text that was issued by Saint Jerome. Chiefest among the Vulgate codices are *Amiatinus*, 8th century; *Cavensis*, 9th century; *Fuldensis*, A.D. 541-546; *Kenanensis*, Book of Kells, 8th century; *Stonyhurstensis*, 7th century.

**V. Other Versions.**—Syriac manuscripts represent six distinctive Syriac versions of the New Testament. The *Old Syriac* version, made about the middle of the 2d century, is represented by two important manuscripts of the 5th century. The Curetonian Syriac manuscript was discovered in 1842 among manuscripts brought to the British Museum from the monastery of S. Maria Deipara, in the Nitrian Desert, Egypt; and was published by Cureton in 1858. The Sinaitic Syriac manuscript was found by Mrs. Lewis and Mrs. Gibson, in 1892, at the monastery of Saint Catherine, on Mount Sinai. Cf. Bensley, Harris and Burditt, 'The Four Gospels in Syriac transcribed from the Sinaitic Palimpsest' (1894); Lewis, 'Light on the Four Gospels from the Sinai Palimpsest' (1913):

Buridg, 'Evangelion da Mepharreshe' (1944).

The *Diatacticon* is a Syriac harmony of the Gospels, made about A.D. 170 by Tatian, an Assyrian and disciple of Saint Justin Martyr. The only manuscript records thereof are two Arabic versions, discovered one in Rome and the other in Egypt, which were published by Cava in 1868.

The *Peshitta* or Syriac Vulgate, was made by Rabbula, A.D. 411-435. The *Peshitta Pentateuch*, dated A.D. 464, in British Museum, is the earliest dated Biblical manuscript. The *Peshitta Gospels* number 125, Acts 58, Paul's Epistles, 67; two of these New Testament MSS are of the 5th century.

The *Phononon* Syriac version has reached us only in a manuscript of Apocalypse at Trinity College, Dublin, and in the four minor Catholic Epistles.

The *Harklean* Syriac version is witnessed to by 35 manuscripts dating from the 7th century and later; its text is like to that of D.

The *Palestinian* Syriac version is found in lectionaries and fragmentary manuscripts; these latter date from the 11th century and later.

2° *Armenian Manuscripts* date from A.D. 887, are very numerous and have not yet been accurately collated.

3° *Coptic Manuscripts*—By the time Egypt became Christian, the 3d or 4th century, its ancient language had been evolved into the following dialects: Sahidic, or Theban, of Upper Egypt; Akhmimic, a dialect that was later superseded by Sahidic; Fayūmic, the dialect of Fayūm; Middle Egyptian; Bohairic, or Memphitic, the dialect of Bohareh, i.e., of the northwestern province of the Delta. The chief Sahidic manuscripts of the Bible, that have been collated, are among the 58 volumes, discovered (1910) in the Fayūm and now called the Morgan Collection,—six books of the Old Testament and the entire New Testament except the Apocalypse. The British Museum also has parts of the Old Testament, Acts and Apocalypse. Moreover, the bilingual T. Cod. *Borgianus*, 5th century, in the Vatican, preserves fragments of Mark, Luke and John in both Greek and Sahidic. Bohairic is well represented by manuscripts of the same character as Aleph-B. The *Curzon Catena*, dated A.D. 889, is the earliest extant Bohairic manuscript and is in the Parkham Library. Cf. Crum, 'Catalogue of Coptic Manuscripts in the British Museum' (1905); Wallis Budge, 'Coptic Biblical Texts of Upper Egypt' (1912).

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**MANUTIUS**, mā-nū'shī-ūs, Aldus (Ital. Manuzio, Manuzzi and Manucci), Italian printer: b. Sermonetta, near Belletri, in the neighborhood of Rome (and hence sometimes known as Romanus), 1450; d. 6 Feb. 1515. He began his studies at Ferrara, and continued them at Rome where he was tutor to princely families. He learned Greek in Ferrara under Guarini and at the suggestion of the Prince di Carpi established a printing-press at Venice 1489. He gained the reputation of being learned in Greek, Hebrew and Latin and entertained in his house many scholars of the day, forming his 'Neacademia' or New Academy,

which later was styled 'Accademia della Fama.' He was the author of 'Dictionarium Græcum' (1497); 'Institutiones Græco-Latinæ' (1501-08); 'Grammaticæ Institutiones Græcæ' (1514); 'De Metris Horatianis' (1509). His son PAULUS (b. 12 June 1512; d. 6 April 1574) continued (1533) to manage the printing-press at Venice, and subsequently (1561) presided over the papal press, Typographia Vaticana, at Rome. He wrote a commentary to Cicero's Letters, and 'Epistolæ Selectæ.' ALDUS, the younger son of Paulus (b. 13 Feb. 1547; d. Rome, 28 Oct. 1597), was a scholar and author from his earliest youth. He continued his father's work at Venice and Rome. Consult Renouard, 'Annales de l'Imprimerie des Aldes' (1834); Didot, 'Alde Manuce et l'Hennéisme à Venise' (1873); Goldschmid, 'A Biographical Sketch of the Aldine Press at Venice' (1887); Omont, 'Catalogues des Livres Grecs et Latins, imprimés par Alde Manuce à Venise' (1892). Consult De Vinne, T. L., 'Notable Printers of Italy During the Fifteenth Century' (1910). See ALDINE EDITIONS.

**MANX CAT**, a breed of house-cats, originating in the Isle of Man, which are characterized by very high hindquarters, and, as a rule, by a very short tail. See CAT.

**MANX LITERATURE.** The Celtic dialect of the Isle of Man, one of the three subdivisions of the Gaelic language, is closely related to the Irish and the Scottish Gaelic, and nearer to the latter than the former. (See CELTIC LANGUAGES; GAELIC LITERATURE). The literature of the language consisted mainly of ballads and carvels (or Christmas carols). The earliest monument of the vernacular is 'The Book of Common Prayer,' translated by Bishop Phillips in 1610 (reprinted in 1895). In later times the orthography closely followed English. In the middle of the 18th century English was a foreign tongue to about two-thirds of the common people, but since that time the decline in the use of Manx has been very rapid, and only two or three thousand of the islanders now speak it. The last edition of the Bible published in Manx was dated 1819, and the last edition of the New Testament was published in 1840. Consult Rhys, 'Outlines of the Phonology of Manx' (1895); Kelly, 'Practical Grammar of Manx' (1803; reprinted 1859); Goodwin, 'First Lessons in Manx' (1866); Jenner, 'The Manx Language, Its Grammar, Literature and Present State' (Trans. London Philol. Soc. 1875); Moore, 'Surnames and Place Names of the Isle of Man' (1890); 'Folklore of the Isle of Man' (1891); 'Manx Carols' (1891); and History of the Isle of Man' (1900).

**MANZANILLO**, mān-thā-nē'l'yō, Cuba, city, port of entry, in the western part of the province of Santiago de Cuba, on the Gulf of Guacanabo on the southern shore. It has a large harbor which is protected by a number of small islands. The city is the port for Bayamo, an inland city about 40 miles east by north from Manzanillo. The low land and the mangrove swamps around the place make it very unhealthy. It is well built and has a number of fine churches, hospitals and schools,—among the schools four are high schools. Urban pop. about 25,000.

**MANZANILLO**, Mexico, seaport, in the state of Colima, on the Pacific at the entrance to the Bay of Cuyuttan, about 40 miles west of Colima, the capital of the state. A railroad connects Manzanillo and the capital, and the city has steamer connections with the principal ports on the Pacific Coast. In normal times its imports total \$1,500,000 annually.

**MANZANITA**, a popular name for various species of *Arctostaphylos* of the family *Ericaceæ*, especially *A. pungens* and *A. manzanita*. They are shrubs or small trees which sometimes exceed 20 feet in height, and often form impenetrable thickets in the region, Pacific Coast of North America from Oregon southward. They have alternate, evergreen, entire leaves, usually white or pinkish flowers in panicle racemes, and generally smooth berry-like drupes. Another well-known species often called by this name is the bearberry (qv), a trailing evergreen shrub which extends from the Arctic region to the mountains of Mexico, whose red berries form one of the principal foods of ptarmigan and other related birds. The great-berried manzanita (*A. glauca*), a California species, bears fruit more than half an inch in diameter. Of the 30 species of the genus, probably a dozen are used for ornamental purposes; some Central American ones in greenhouses where the climate prevents outdoor use; the shrubby western kinds in mild climates; and only the trailing kinds in cold localities. The gnarled roots are an important source of fuel in the untimbered parts of California.

**MANZANO**, Juan Francisco, hoo-än' frän-thēs'kō man thā'nō, Cuban poet: b. Havana, August 1797; d. there, 1854. A negro slave he wrote and published several volumes of verse before he was manumitted (1837), gaining especial fame by 'Mis treinta Años' (1836), translated into French, German and English, and by 'Apuntes Autobiográficos,' which was never printed in Spanish, but was published in English by Richard Robert Madden in 1840 under the title 'Poems by a Slave in the Island of Cuba recently Liberated.' Manzano's other works include 'Cantos a Lesbia' (1821), several excellent lyrics reprinted in Calcagno's 'Poetas de Color' (1868), and a drama 'Zafra' (1842).

**MANZANO MOUNTAINS**, a range on the east side of the Rio Grande Valley in Bernalillo, Torrence and Valencia counties southeast of Albuquerque, N. Mex. It extends from Tijeras Canyon on the north to Abo Pass on the south, a distance of 45 miles. The very steep western front of the mountain is granite and schist, capped by a thick sheet of limestone which dips east and constitutes the long sloping plateau of the summit and east side. The highest summits are Manzano Peak, 10,086 feet; Osha Peak, 10,023 feet, and Mosca Peak, 9,723 feet, which are about 5,000 feet above the Rio Grande. To the east is the Estancia Valley, long famous for its salt lakes. Near Bosque Peak is a large spring. The region is forested with yellow pine, piñon and juniper, and is included in the Manzano Forest Reserve. Deer, bear and wild turkeys and many minor wild animals remain in these mountains. Ores of gold, lead and silver are mined on the west slope. Most of the long canyons on the eastern slope contain streams from large springs. The water is utilized by many settlers

mostly Mexicans who have occupied the region for several centuries. Their small plazas or settlements are Chilili, Tejuque, Torreón, Escabrosa, Punta del agua and Manzano. The latter has given name to the mountain, the plaza taking its name from a grove of apple trees (*Manzano* in Spanish) of prehistoric origin. The old ruins of Abo and La Cuara are near the south end of the range.

**MANZANOS**, man-za'nōs, a natural park in Lincoln, Bernalillo and Santa Fé counties in New Mexico, southeast of Albuquerque. The Manzano Range, the highest peak of this section, numerous table-lands and valleys, with many springs and small streams, are the chief features of this park. The Rio Grande is on the west side; the base of the mountains is about 1,000 feet above the river and about 11,000 feet above the level of the sea. The almost perpendicular, stupendous red cliffs which rise above the plain and form the western face of the mountains are almost unscalable. South of the red-cliff region is the canyon of Las Moyas, and south of this canyon Bosque Peak, the highest point of the range. Near the summit of the peak is a spring which gushes up in a lake about 50 feet wide.

The view from the summit of the range at some points includes the green valley of the Rio Grande, mountains west of Albuquerque and north to the walls of Santa Fé, and intervening valleys and mountains. On the west of the park, or the western border, are the white Manzano salt lands, on the southeast the gypsum desert. On the level mountain tops are stretches of clearing where the grass grows luxuriantly. Between Hell Canyon and Chilili is a region of immense pine and piñon forest. Some of the animals found here are deer, bear and wild turkey. Grains, vegetables, alfalfa, fruit and other farm products are raised. Sheep, horses and cattle are raised extensively.

**MANZONI**, mán-zō'nē, Alessandro, Italian poet and novelist: b. Milan, 7 March 1785; d. there, 22 May 1873. He studied at Milan and Pavia, and published in 1806 his poem on the death of his friend Imbonati, which was followed in 1815 by his 'Sacred Hymns' ('Inni Sacri'). In 1819 appeared his first tragedy, 'Il Conte di Carmagnola,' the first drama in which an Italian defied the unities. This play was reviewed and praised by Goethe, who took a warm interest in every subsequent production of Manzoni. The death of Napoleon inspired one of the finest odes of the century, 'Il Cinque Maggio' ('The Fifth of May'). In 1823 his second tragedy, 'Adelchi,' appeared. This, as well as its predecessor, finds more favor in personal reading than on the stage. After this Manzoni divided his time between country pursuits at his residence in the neighborhood of Milan and the composition of his romance 'I promessi Sposi' ('The Betrothed'), a Milanese story of the 17th century, published in 1827, and which has been translated into most of the European languages (Eng. in Bohn's Library 1883). He strove earnestly to make Tuscan the universal language in Italy. As a poet he out-rivalled all his Italian contemporaries. Verdi's 'Manzoni Requiem' is a magnificent musical tribute to his memory. (See BETROTHEN, THE). Consult Sauer, 'Alessandro Manzoni' (1872); Stoppani, 'I primi anni A. Manzoni' (1874);

Let. 150, 'A. Manzoni, studio Morrafeo e critico' (1873); Cam. 'A. Manzoni, reminiscenze' (1878); W. 'Le romanisme de Manzoni' (Paris 1881, Eng. trans. by Geddes-Wilkins, Boston 1911).

**MAORIS**, *maō-riz* or *mow-riz*, native inhabitants of New Zealand, a people of Polynesian race, as is attested not only by ethnological considerations, but by their own legend that they came from Hawaiki (Hawaii or Samoa). Their carefully kept genealogies go back less than a score of generations, so that it seems probable that their coming to New Zealand was four or five centuries ago. Remains of a previous population with Papuan characteristics have been found. The Maoris are well built, with longer bones and shorter legs than the European type; they have black hair, little whisker on the face, and smooth bodies, wide open, straight black eyes, heads slightly macrocephalic, the index being 77, nose straight and color slightly brown. Their costume, no doubt adopted only upon their coming to a colder country than their early home, was a loose garment, woven from the fibre of *Formium tenax*. Tattooing they brought with them to New Zealand and perfected it. They tattooed the face, decorating in this way the young warrior after his first successful fight, and adding fresh designs for each new exploit. They also knew how to make carvings of great delicacy, and armed themselves with stone weapons. Their religious beliefs were crude, but tinged with animism; they recognized the soul as distinct from the body and surviving it, but connected an enemy's cunning and bravery so closely with his dead body that they ate it, thus to win his warlike virtues, locating intelligence in the brain and courage in the heart. Their worship combined ancestral cult with deification of natural forces and some fetishism. They were divided into tribes, six of these representing the divisions among the original settlers. A warlike people, their chief had absolute power and could pronounce "tapu" or taboo (q.v.) at will. Before the coming of the English they were mostly vegetarian, caught some fish, lived in bark or bough huts and made canoes. Polygamy was practised, and the *ariki* or priest-chieftains acted as physicians, having some knowledge of herbs. Both their numbers and physique have suffered sadly since the introduction of civilization. For the history of the Maoris since British occupation (see *NEW ZEALAND, Government and History*). Consult Cowan, James, 'The Maoris of New Zealand' (in 'Makers of Australasia' Melbourne 1910); Makeriti, 'Old Time Maori' (London 1938).

**MAP**, or **MAPES**, *māps*, Walter, English scholar and poet of the 12th century. He was probably a native of Herefordshire. He studied at the University of Paris and became a favorite at the court of Henry II. He attended the Lateran Council of 1179, and was appointed archdeacon of Oxford in 1197. Map is now generally believed to have been probably author, or in large part, author of 'Lancelot' in the Arthurian cycle. It is extremely probable, at any rate, that Map did contribute to the bringing of the cycle into its present state, but it is uncertain to what extent his work has survived. He is undoubtedly the author of a curious book 'De Nugis Curialium,' a notebook of the events

of the day and of court gossip. It was edited for the Camden Society in 1850 by Thomas Wright. To Map is attributed the famous drinking-song beginning.


"Meum est propositum in taberna mori"

**MAP.** The word derives from the Latin *mapa* meaning napkin, cloth, sheet (just as we speak now of topographic "sheets"). A map is a symbolized picture of the Earth pattern drawn to scale on a horizontal projection, to which lettering usually is added for identification. Abstraction and symbolization often go far from the original conception of a picture, as for instance on a political map.

**Scale.**—Every map is on a definite size relationship with the part of the land it represents, which can be expressed in three different ways:

(1) Numerical scale, or representative fraction, as 1:1,000,000, meaning that one inch on a map represents 1,000,000 inches in nature, or nearly 16 miles.

(2) Inch to mile scale, as 1 inch to 8 miles (1 506,880), meaning that one inch on the map represents 8 miles in nature.

(3) Graphic scale, as  miles, which has the advantage that it remains true even if the map is photographed larger and smaller.

**Enlarging and Reducing Maps**—Changing the scale of maps can be accomplished by several methods:

(a) The quadrangle method, by drawing closely set nets of parallels and meridians both on the original map and for the new drawing on larger or smaller scale. All features are filled in by hand. This method is especially good if the projection system is also changed.

(b) Photostat or photograph, which, however, often shows some distortion.

(c) Pantograph, which instrument is based on a parallelogram with free moving angles and can enlarge or reduce drawings with great precision.

(d) By various arrangements of lenses, mirrors, or prisms an enlarged or reduced image can be projected upon the drawing paper.

Maps on a scale of 1:1,000,000 and smaller are called *small-scale* maps; *large-scale* maps are over 1:100,000; in between are the *medium-scale* maps.

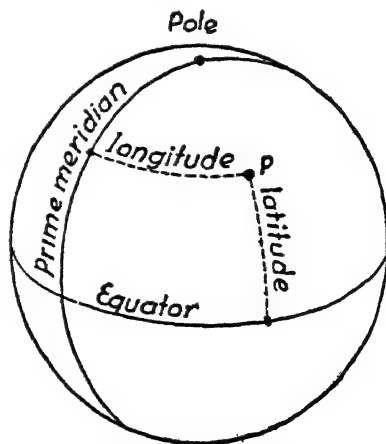


FIG. 1.—Latitude and longitude.

**Parallels and Meridians.**—The ancient Greeks established a co-ordinate system dividing the arc between the equator and the poles into 90° in parallel circles which get smaller nearer the equator. Similarly the equator is divided into 360 parts and through the division points and the two poles are 180 semicircles or meridians. Distance from the equator measured along a meridian and expressed in degrees (minutes and seconds) is called *latitude*. Distance in degrees reckoned from a chosen *prime meridian* measured along a parallel is called *longitude*. While all degrees of latitude are equally long (about 69 miles), degrees of latitude vary from 69.17 miles at the equator to 0 at the pole. For any degree

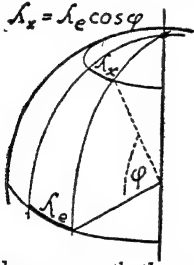


Fig. 2.—Longitude varies with the cosine of the latitude.  $\lambda_x$ =longitude on any parallel.  $\lambda_e$ =longitude on the equator.  $\phi$ =latitude.

of longitude where  $\phi$  is the latitude, for instance 1° of longitude at lat. 60° is one half of 1° long. at the equator,  $\cos 60^\circ$  being 0.5.

In all these considerations the Earth is regarded as a perfect sphere. As the exact form of the Earth is more nearly a rotational ellipsoid, the degrees of latitude are slightly smaller near the equator, 68.7 miles, and larger near the poles, 69.2 miles. Prime meridians changed a great deal during history from the Fortunate Islands of Ptolemy to Ferro (qv) in the Canary Islands. Even Washington, Philadelphia, Boston, and Hartford were used as prime meridians. By international agreement, at present the meridian at the Royal Observatory in Greenwich, England, is used for prime meridian.

Most maps are oriented with north on top, but this is conventional. Other orientations are often used at present to bring out hidden relationships.

**Projections.**—The spherical surface of a globe cannot be flattened into a map without stretching or tearing. If only a small part of the Earth's surface is shown, as on large-scale maps, distortion is negligible, but on medium-scale maps, and especially small-scale maps of the whole Earth, considerable distortion is necessary.

Several geometrical methods were tried. If the globe is enveloped into a cylinder and the surface is projected upon this surface and then the cylinder is cut open and laid out flat, we have a *cylindrical projection*. Similarly, if we cap the globe with a conical hat, project upon the cone, split open the cone along one of its elements and lay it out flat, we have a *conical projection*. Also, if the surface of the globe is projected upon a tangent board from some eye point at a selected distance, we have an *azimuthal projection*.

These projections are derived from actual perspective projection from a point or points upon a surface. Except for a few azimuthal projections, however, no perspective projections are in actual use. Most of them are simply some kind of network of parallels and meridians to suit the map maker's purpose. A map projection can be defined as any orderly network of parallels and meridians upon which a map can be drawn.

As the problem of flattening spherical surfaces is impossible, there can be no perfect projection. We can choose from dozens of imperfect solutions the one which is most suitable for our particular purpose. Some projections have special merits. *Equal-area* or *equivalent* projections are those in which every part of the map, and the map as a whole, has the same area as the corresponding part of the Earth's surface. To achieve this, shapes and angles have to be considerably distorted. *Conformal* or *orthomorphic* projections are those in which every small portion has the same shape as the corresponding part on the globe. Not only are the parallels and meridians right angles to each other, but they have also the correct proportions. To achieve this, the scale of the map has to vary a great deal. Some projections are not equal-area nor conformal but have small scale errors.

It is obvious from the foregoing that on any map only the parallels or only the meridians or certain other lines can be true to scale; all other distances are distorted. Which lines are selected to be *true to scale*, that is the same scale as on the corresponding globe, is the fundamental consideration in projections. Several hundred projections occur but only a few selected projections are presented here.

**Rectangular Even-spaced Projection.**—This is the simplest of projections, consisting of even-spaced horizontal parallels and vertical even-spaced meridians. Meridians are spaced on the central parallel of the map according to

$$\lambda_x = \lambda_e \cos \phi \quad (\text{see Fig. 2}).$$

**Mercator Projection.**—The equator is divided truly for vertical meridians. Parallels are horizontal, spaced conformally; that is, their relation

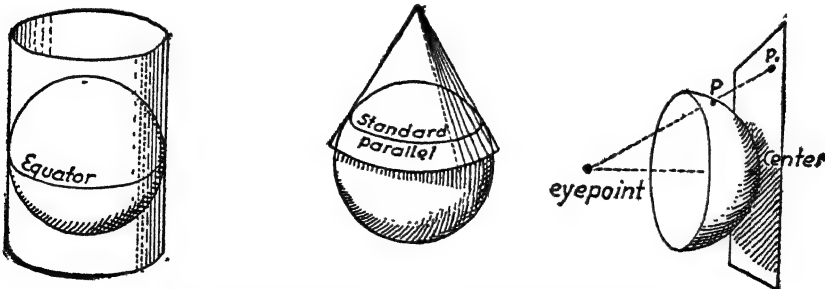


FIG. 3.—Cylindrical, conical and azimuthal projections.



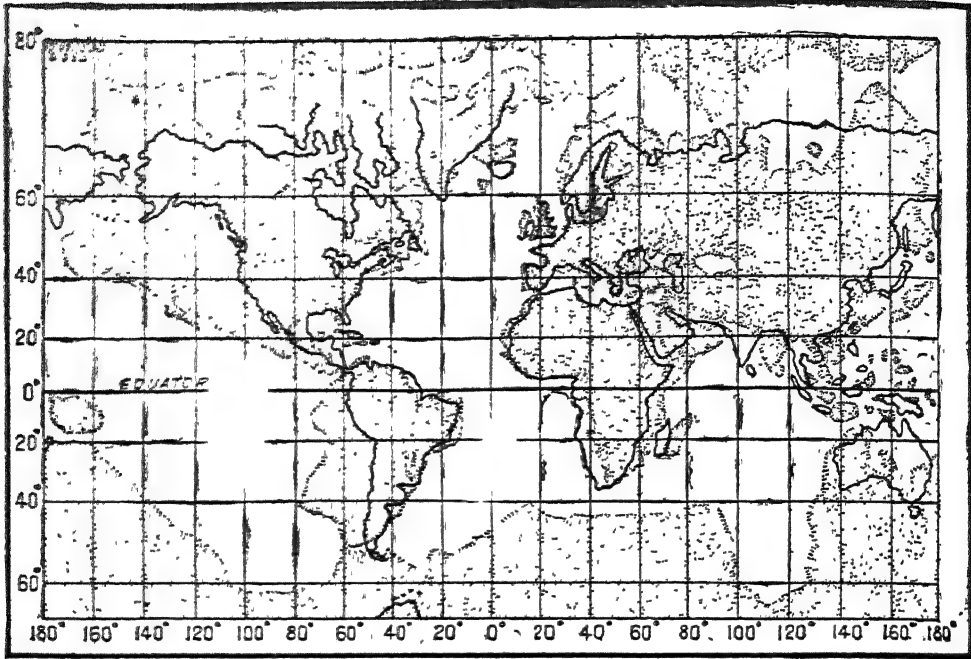


FIG. 4.—Mercator's projection from his World Map of 1569. Mercator's delineation of the land is dotted.

to the meridian is the same as on the globe. On the globe the meridians converge, but in this projection they are parallel. To get the correct proportion, the parallels are spaced at increasing distances toward the poles. The poles are at infinite distance.

The chief merit of the projection is that compass directions, or rhumb lines, appear as straight lines. (On the surface of the globe they spiral towards the poles.) For this reason the projection is ideal for navigation, in spite of the enormous variation of scale. It is less good for world maps for which it is frequently used. The pro-

The *sinusoidal* and the *Mollweide*, or *homolographic*, projections have both horizontal parallels but the meridians converge toward the poles. Both projections are equal-area. The *Eckert* projection is similar, but the poles are represented as lines half the length of the equator. All these projections are popular for world maps and continent maps.

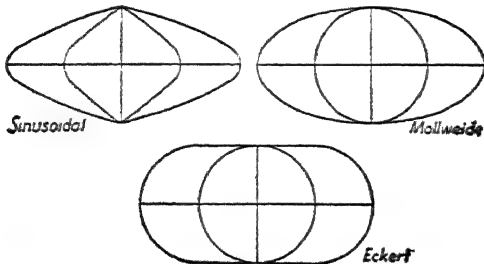


FIG. 5.—Outlines of the world and the hemisphere in various projections with horizontal parallels.

jection was delineated by Gerardus Mercator, the great Belgian cartographer, in 1569 (see Fig. 4).

**Other Projections.**—Among other projections with horizontal parallels and vertical meridians, mention should be made of the Gall's projection and also of Miller's cylindrical projection, in which the parallels are spaced at increasing distances nearer the poles but not so much as in the Mercator projection.

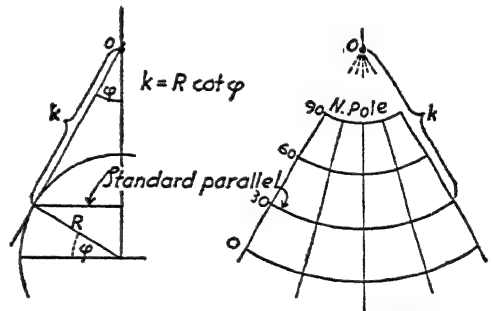


FIG. 6.—Construction of the conic projection.

In the *conic* projection, the globe is capped by a cone which touches it along a selected standard parallel. The radius of this standard parallel is  $l = R \cot \phi$ . The standard parallel is obviously divided truly; the meridians are radiating straight lines, placed truly on the standard parallel, and the parallels are concentric circles. For best results usually the central parallel of the map is taken as standard. The spacing of the parallels would be uneven in the actually projected network. In the practically used conic projection, the parallels are concentric circles placed at their true distances. The projection is used for country and continent maps in the tem-

perate zones on account of its small scale error. The scale error is further reduced in the *conic projection with two standard parallels*. On a map of the United States the maximum scale error would not exceed 125 per cent.

By different spacing of the parallels, this projection can be made equal-area. The *Albers conical equal-area* projection is adopted as the best projection for the country by the United States Geological Survey. By spacing the parallels differently, the projection can be made conformal. The *Lambert conformal conic* projection has relatively straight azimuths for which it is generally used for air navigation charts.

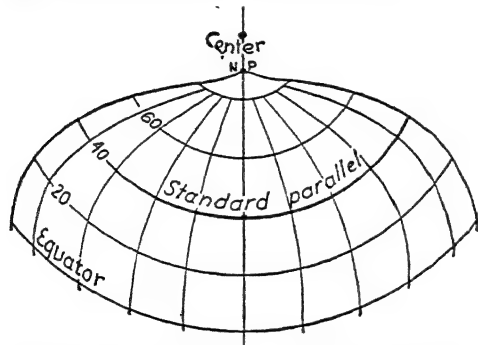


FIG. 7.—Bonne projection of the half-hemisphere centered on lat. 40° N.

The *Bonne* projection is similar to the simple conic, except that not only the standard parallel, but all parallels are divided truly, which makes the meridians curved and the projection equal-area. It is a popular all-around projection, used for all scales, from world maps to topographic sheets.

The *polyconic* projection has a truly divided vertical central meridian. The parallels are non-concentric circles, each with a radius  $l = R \cot \phi$ , as if each would derive from a tangent cone. Each parallel is divided truly, the connecting lines form the meridians. The United States Geological Survey topographic sheets are on this projection.

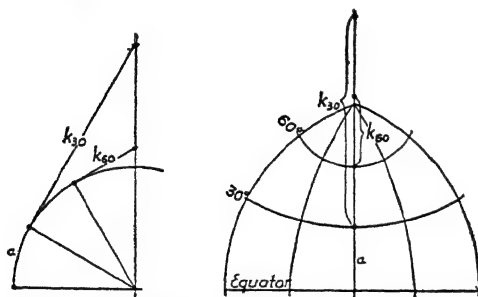


FIG. 8.—Construction of the polyconic projection.

The *azimuthal* projections derive from projecting a part of the earth's surface upon a plane surface from an eye point. The plane can be tangent at the pole, at the equator, or any other point, and all three views—polar, equatorial, and oblique—are often used.

In the *gnomonic* projection the eye point is in the center of the sphere. The projection has extreme distortions of size and shape, but it shows

all great circles as straight lines, for which it is useful for laying out transoceanic sailing and flying routes. The meridians are straight lines; the parallels are hyperbolas.

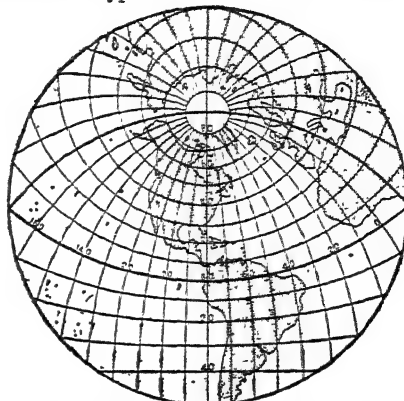


FIG. 9.—Stereographic projection of the hemisphere in oblique view.

In the *stereographic* projection the eye point is at the antipodal point of the center of the map. The projection has the interesting property that not only all parallels and meridians, but also all other circular lines of the globe appear as circles on the map too. It is a conformal projection, but it is not much used on account of its considerable distortion of scale.

The eye point of the *orthographic* projection is in the infinite; the rays are parallel. The parallels and the meridians are ellipses, ranging from a straight line to a circle. The great merit of this projection is its visual quality—it looks like a globe. Although the distortion on the sides of the map is enormous, we see everything in correct proportion because we perceive not a map but a picture of a three-dimensional globe. For this reason it became very popular for so-called «global» maps.

Two azimuthal projections do not derive from direct perspective methods. The *azimuthal equidistant* projection is the only one in which every point is shown, not only the correct distance, but also in correct direction (azimuth) from the center point. All other distances and directions, however, are distorted. The *Lambert azimuthal equal-area* projection is very good for hemispheres and for continent maps.

Besides these, a number of interrupted, star-formed, and other projections are used. Among these the butterfly projection of B. T. S. Cahill is particularly attractive. Another interesting group of projections derives from the oblique, or transversal development of the cylindrical and related projections. The transverse Mercator projection is particularly interesting and used for the new maps of the British Ordnance Survey.

**Symbols.**—As all geographic information of the map is given with the help of symbols, a good symbol is one which can be recognized without a legend, yet is simple, distinct, and does not take up more space than its importance allows. Lines, patterns, and colors can all be used. Symbols are different on small-scale maps and on large-scale maps, and it makes a great deal of difference whether colors can be used or not.

Standardization of symbols is necessary by government agencies. Private cartographers, not hampered by such regulations, are in a position

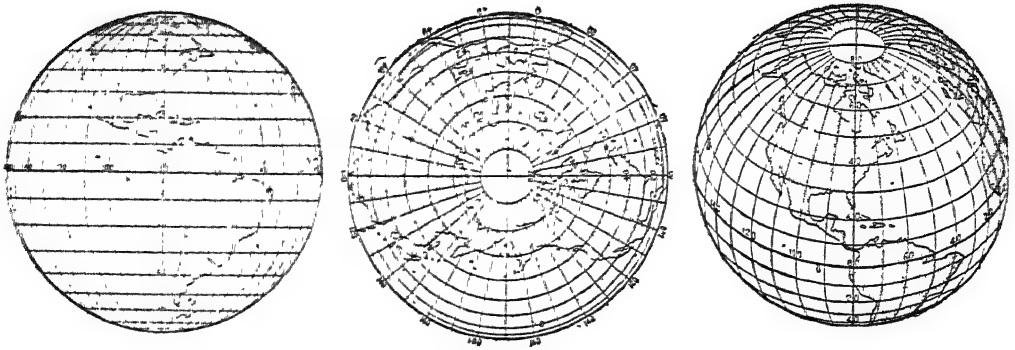


FIG. 10.—Orthographic projection of the hemisphere in equatorial, polar, and oblique views.

to design new and better symbols. Airplane photography presents a rich pattern of the earth's surface which our present symbols are not quite able to express, and a major change is expected in the appearance of maps in the future.

If colors can be used, the conventional color of hydrography (water features) is blue; for topography (relief features, such as hills and mountains) brown; and for culture or man-made features, black and red. Vegetation is usually shown with green symbols.

**Relief Features.**—The representation of mountains is a particularly difficult problem of cartography, essentially because we represent the mountains on maps as seen from above, while our familiar conception of mountains is as they look from below. Several methods are in use.

**Hachuring.**—This is the older type of representation of relief, and is usually applied to black-and-white maps. Slopes are shown by lines of variable thickness running along the «dip» of the slope, the way water would run upon that surface. The steeper the slope, the thicker the line. The method was systematized by F. G. Lehmann, a Saxonian officer in Napoleon's army.

**Plastic Shading.**—This method requires reproduction by half-tone method, which limits its use. Two methods are used. In «vertical illumination» the steeper the slope, the darker the tone (as in hachuring). This method is used by the topographic sheets of Norway. Much more

common is «oblique illumination» somewhat as a plaster model of the region would look lighted sideways but photographed from above. This method is often used in combination with contour lines.

**Contour Lines.**—These are continuous lines connecting places of the same altitude above a datum plane, drawn along selected regular intervals. All points between two contour lines have to be at intermediate elevation. Steep slopes produce close intervals; on gentle slopes the contour lines are far apart. The exact angle between contour lines can be expressed by «feet per mile» or graphically by «profiles.» All contour lines are horizontal and perpendicular to hachure lines. The contour interval varies with the scale of the map and the ruggedness of the land. The 1:62,000 topographic sheets of the United States have 20-foot intervals in hilly country. The datum plane is mean sea level.

**Lettering.**—Letters obscure by their bulk much topographic detail on maps, and they are kept as small and fine as legibility will permit. If letters are applied to an area, they are spread so as to indicate the trend or extent of the area. Letters are sometimes hand-drawn, but stamped, pasted, or templated letters are also common. Most United States maps have «slanted» letters for hydrography, «block» or «gothic» letters for relief features, and «Roman» letters for political units.

**Composition.**—Sectional maps—parts of a larger map—fill a quadrangle between two parallels and two meridians, and title, scale, key, name, authorities, glossary, and all other «marginal information» are set up outside the map. Maps of a unit region, however, have often all this pertinent information collected in a «cartouche» inside the frame of the map. Much empty space can be taken up by «insets.» These insets either show an important portion on a larger scale, or the location of the region on a smaller-scale map.

**Reproduction.**—Maps are drawn usually  $1\frac{1}{2}$  to 3 times the publication size to obtain finer detail. The most common method of reproduction is by offset planography. Only if the map has to be printed together with type is it reproduced by photoengraving (q.v.). Color maps are usually printed from separate color plates drawn on separate papers. Maps reproduced in four-color process are also common. (See LITHOGRAPHY.)

**Charts.**—Marine charts for navigation differ from land maps chiefly by their emphasis on the sea. They show submarine contours, usually ob-

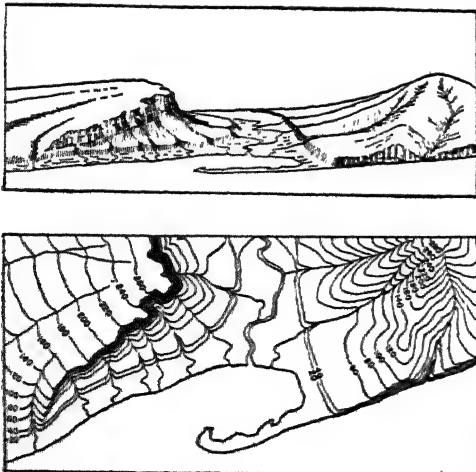


FIG. 11.—Topographical features expressed by contour lines. After the U.S. Geol. Survey.

tained by sounding. Almost all charts are on the Mercator projection. The datum plane is usually a low-water level for sounding, and a high-water level for land features. Charting has been greatly helped by the sonic depth finder instruments and from radar, which helps to locate exactly the point of the surveying vessel. The charts of coasts of the United States and territories are surveyed and prepared by the United States Coast and Geodetic Survey, while those of foreign waters are published by the United States Hydrographic Office (qq.v.). See also article on CHART.

**Topographic Maps.**—Every civilized country publishes detailed general maps of the land on 1:25,000–1:100,000 scale. In the majority of countries these maps are prepared by the army. Relief is usually shown by contours, but in reconnaissance maps plastic shading is common. The topographic sheets of the United States are prepared by the United States Geological Survey (q.v.) and also by the Corps of Engineers. The fine topographic sheets of England are prepared by the British Ordnance Survey.

**Air Navigation Maps.**—These are usually published on 1:500,000 to 1:1,000,000 scale, using contour lines with altitude tints, and show all features which help airmen, especially radio beacons. The United States Army Map Service has prepared air navigation maps on 1:1,000,000 scale of the entire world.

**Military Grids.**—All new topographic maps have a grid system of even squares overprinted,

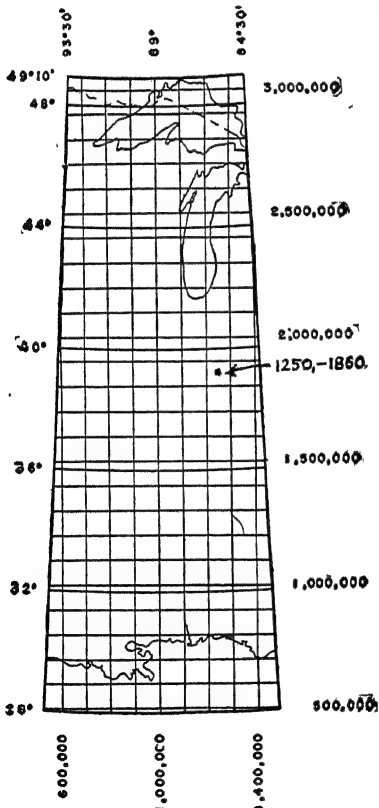


FIG. 12.—Progressive military grid of the U.S. There are seven grid zones. This is Grid Zone C.

\*From Raisz, E., "Geography of the Mineral Industry," *Mining and Metallurgy* 1941.

for easier location of spots. These grid systems are drawn upon a standard map in a specified projection and grid distances and directions are not true on any map on another projection, but as long as the area involved is small, there is not much difference. In the United States Progressive Military Grid System, the country is divided into seven grid zones, and a 1,000-yard square grid is drawn upon a polyconic projection.

**Statistical Maps.**—These maps show quantitatively the distribution of a certain variable, as, for instance, rainfall, acreage of wheat, reli-

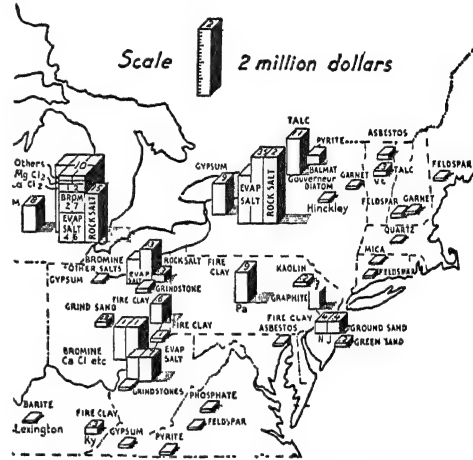


FIG. 13.—Statistical map with superimposed diagrams, showing the nonmetallic mineral production of the northeastern U.S.\*

gions of people. Three methods are used: (1) isopleths, which are lines connecting equal values; (2) dot system; and (3) superimposed diagrams. The last is recommended whenever the distribution is highly variable or has to be subdivided. «Density of population» maps are the most important in this group. Usually a combination of the dot system and superimposed circular graphs are used on them.

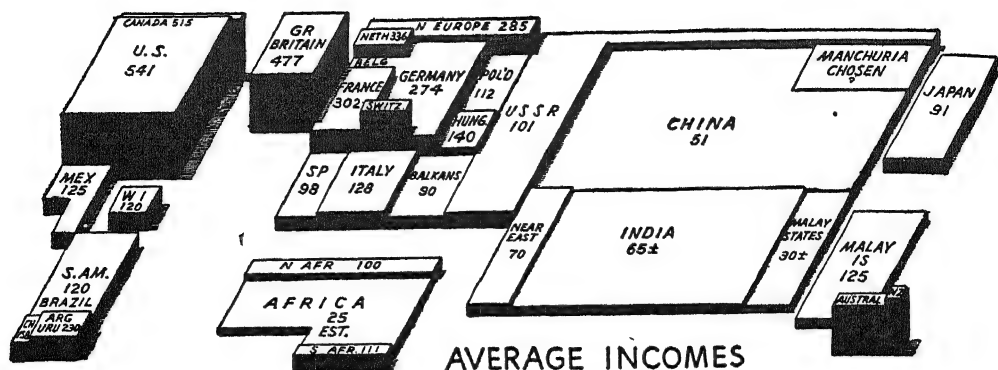
**Cartograms.**—Highly abstracted diagrammatic maps are called cartograms and are used much in statistical mapping and for showing the distribution or relations of distributions of certain variables over the earth.

**Land Utilization Maps.**—These indicate forest, meadow, various types of cultivation, etc., and form the most important type of maps in modern cartography. Various colors, patterns, index numbers and figures are used.

**Scientific Maps.**—This type of map is published in increasing numbers in atlases, books, and periodicals. Not only do the Earth sciences, such as geology, meteorology, climatology, oceanography, seismology, astronomy, plant geography, and zoogeography use maps as an essential part of their presentation, but also economics, history, sociology, etc., use maps in increasing numbers.

School maps, wall maps, city maps, railway, auto-road maps, maps of art and advertising, are just a few more items each of which has its own specialized cartography. See also GLOBE.

**History.**—The ability of making maps is an inherent quality of mankind. Primitive people are able to draw maps of large areas in vertical projection without any difficulty. The Eskimos, the Indians, the nomads of Asia and Africa, and



modified after Colin Clark, *The Conditions of Economic Progress*, 1940  
 FIG. 14.—Statistical cartogram. The base of blocks is proportionate to population.  
 From E. Raisz, *Atlas of Global Geography*.

the South Sea Islanders are excellent map makers.

The oldest maps which survived were made by the ancient Babylonians, but records indicate that the Egyptians, Persians, and Phoenicians also made maps, few of which survived, however.

Cartography as a science was established by the ancient Greeks. The Ionian geographers of the 5th and 6th centuries B.C. drew the earth in the form of a disk floating in the oceans. In the 4th century, an oblong earth was drawn from which our expressions latitude and longitude derive. At the same time arose the idea of a spherical earth, and it was a well-established fact in the time of Aristotle. The tilt of the ecliptic was accurately measured and the equator, poles, tropics, zones were defined. The size of the earth was measured by Eratosthenes of Alexandria in the 3d century (with an error of less than 14 per cent, 28,000 miles circumference), and later by Posidonius, who, however, figured it one-third too small. This latter measurement was accepted by Ptolemy and influenced Paolo dal Pozzo Toscanelli and Columbus (qq.v.). Eratosthenes prepared a map also showing certain principal parallels and meridians in which he was attacked by Hipparchus, who advocated an even system of parallels and meridians dividing the circle into 360°, as we still use it at the present time.

The only Greek map which survived was an atlas of Claudius Ptolemy of Alexandria about 150 A.D. Much of his material is based on the Phoenician, Marinus of Tyre. His atlas, a supplement of his 8-volume *Geography*, consists of 27 detailed maps and a map of the known world. His delineation had an immense influence upon the cartography of the Renaissance, and some

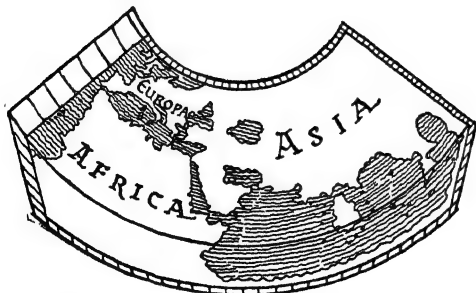


FIG. 15.—Outline of Ptolemy's World Map.

of his mistakes did not disappear from maps until the 18th century.

Roman cartography did not continue the scientific attitude of the Greeks. They preferred a simple map to be used for administrative and military purposes. For this they returned to the disk-like earth of the early Greeks and the Roman *Orbis Terrarum* became the standard map of the world for 13 centuries. It has east on top and we still speak of «orientation». Most of the map is an exaggerated representation of the Roman Empire with the rest of the world represented only as outlying provinces. A peculiar Roman product was the *Tabula Peutingeriana* (see PEUTINGER'S TABLE) from the 4th century A.D., made by Castorius in which Roman roads are delineated on an enormously elongated scroll 22 feet long and only 1 foot wide. A good medieval copy of this map survived.

The early Middle Ages added little to cartography. A great number of crude maps survived in various codices, but they were mostly copies of the *Orbis Terrarum*. Further diagrammatization of this map resulted in the T-in-O maps (*Orbis Terrarum*) with Jerusalem in the center. These maps, with their regularity, ap-



FIG. 16.—The Orbis Terrarum of the Romans. From E. Raisz: *General Cartography* (McGraw-Hill 1938).



pealed greatly to the medieval mind, not interested so much in reality but in divine harmony. A good map of England was prepared by Matthew Paris (q.v.) in St Albans, c. 1250.

The Arabs are credited with the first school atlases dating back to the 10th century, showing highly diagrammatic maps. They measured the size of the earth with great accuracy. Their tables of latitudes and longitudes surpass anything prior. The most famous Arab map is the large world map of Idrisi (Edrisi) (1154) of rich detail. It shows, however, Christian influence as it was prepared in the court of King Roger II of Sicily.

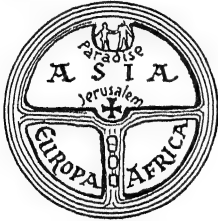


FIG. 17.—T in O map from the 11th century.

**Portolan Charts.**—These charts appeared around 1300 and seem to be the copy of a remarkable early chart showing the Mediterranean and Black Seas with surprising accuracy. Indeed, this chart was used for actual navigation for three centuries. Over a hundred copies are known, with but few additions and improvements. The original portolan chart was based on an organized compass survey, probably under the Genoese Admiralty.

**The Great Discoveries.**—The introduction of the compass and improved sailing vessels made possible the voyages of Columbus, Magellan, and others. These great discoveries caused a revolution in map making, as America and its relation to Asia had to be explained to the public. The outlines of four maps below show the confusion which prevailed in the minds of cartographers in the early 16th century. Juan de la Cosa's map

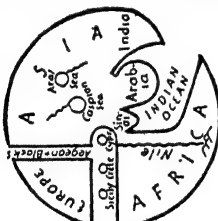


FIG. 18.—Diagrammatic Arabic schoolmap from the 10th century.

of 1500, if its date is correct (which is doubtful), is the earliest representation of the Americas. Martin Waldseemüller's (q.v.) map is the godfather of America, as it was the first to name the continent so. Diogo Ribero's map is a copy of the *padron real* or royal map of Spain. This is the first real world map showing the immensity of the Pacific Ocean, with China and India in their proper locations.

**Engraving and Printing.**—Hitherto all maps were manuscript and reproduced by hand. The invention of engraving and printing made maps very much cheaper and the flow of new information was facilitated. Woodcut maps were common at the end of the 15th century, but gradu-

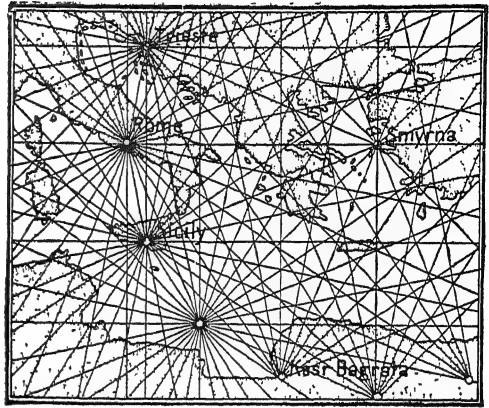


FIG. 19.—Portion of Portolan Chart, c. 1300.

ally copper engraving became the generally used method. Waldseemüller's map was engraved in copper.

**Rediscovery of Ptolemy.**—Ptolemy's map survived chiefly through the Arabic scholars. His work was translated into Latin around 1410 and since then it was republished perhaps a hundred times, mostly with the addition of new *Tabulae Modernae*. So great was the authority of Ptolemy that Waldseemüller replaced the good outline of the Mediterranean of the portolan charts with the far worse outline of Ptolemy.

**The Dutch School.**—The Low Countries, situated between England, France, and Germany, and subject to Spain, had good opportunity to obtain information from these countries. Dutch industry and talent supplied the rest, and in the 16th and 17th centuries the Low Countries were the leaders in the map making of Europe. Gerardus Mercator (q.v.) of Louvain is called the father of Dutch cartography. The projection bearing his name appeared in 1569 (see Fig. 4). Hundreds of maps embodying remarkably correct information and restrained, yet artistic rendering, bear his name. Abraham Ortelius (q.v.) published the earliest modern atlas, the *Theatrum Orbis Terrarum*, in 1570. Jodocus Hondius and Jan Jansson followed the Mercator tradition. The House of Blaeu in Amsterdam produced perhaps the best maps of the Renaissance. Among the later Dutch map houses, the Visshers, the Donckerts, Schenck, Allard, and De Witt should be mentioned. The father of English cartography is Charles Saxton (d. 1611); his county maps are superb. The atlases of Norden, Speed, Goss, Pitt, and Seller closely followed the Dutch style.

**Surveying Methods.**—Hitherto almost all maps were the result of development: one person made a map, his successors improved it, and gradually a fair representation developed, supported by a few latitude measurements, otherwise unsurveyed. Yet the principles of triangulation are described by Gemma Frisius in 1526, and Willem Janszoon Blaeu actually triangulated a portion of Holland. At the end of the 17th century, the sextant, telescopic theodolite, the planetable, the barometer, and accurate pendulum clocks were available for land measurements.

**The French School.**—Modern cartography dates from the longitude measurements of the French Academy around 1680. About 80 longitudes were accurately measured by simultaneous



FIG 20 —Famous map of 1529.

observations of the occultations of the satellites of Jupiter, as chronometers were not yet available. The results of these measurements were laid down on a polar map, covering the floor of the Paris Observatory, by Jean Dominique Cassini. French cartographers of the 18th century excelled in fine, accurate work, critical, scientific attitude, and less inclination for decoration. Outstanding men were Guillaume Delisle, Jean Baptiste Bourguignon d'Anville, Gilles, and Didier Robert de Vaugondy, J. N. Bellin, Philippe Buache, Rigobert Bonne and many others.

*The English School.*—Early British cartography was under Dutch influence. In the 18th century the fine French style prevailed, but by the end of the 18th century the British even surpassed the French in the number and excellence of their maps. The maps of John and Thomas Bowles, Thomas Jefferys, William Faden, John Rocque, John Cary, and Aaron Arrowsmith were popular even in America.

*National Surveys.*—The triangulation of France was organized by the Academy of Sciences under César François Cassini de Thury and accomplished in 1744. The preparation of detailed topographic sheets was the further life work of this great cartographer. This was the first great national survey, which was soon followed by Austrian Belgium, and the British Ordnance Survey 1791. In the 19th century every civilized nation produced its topographic sheets.

*Diversification of Cartography.*—The 19th century witnessed a great diversification of cartography. Geologic maps of William Smith, school maps of Emil Sydow, physical maps of Karl Ritter, atlases of meteorology and climates of John Bartholomew, relief models of Albert Heim, historical map reproductions of Jomard and Konrad Miller, are just a few examples of various tasks which found a cartographic answer. The International 1:1,000,000 Map of the World is the first great experiment in international co-operation in mapping.

*American Cartography.*—The oldest map wholly produced and published in America is John Foster's woodcut of New England from 1677. The Bonner map of Boston of 1722 is the first large city map. Lewis Evans' *Middle British Colonies* in 1755 is the most outstanding colonial map. The British naval and military maps, previous to the Revolution, by Samuel Holland (New York, New England); John Gascoigne

(South Carolina, Georgia), G. Gould (Florida); Ross (Mississippi River); Wm. Brassier (Lake Champlain); J. Montresor (New York state), John Hills (New Jersey); and many others formed a fundameht for the later maps of the United States. Washington's surveyors, Thomas Hutchins, Simeon De Witt (qq.v), and others, organized the official cartography of the new state. In the early 19th century almost every state of the Union prepared a state map on 4 to 8 miles to the inch scale. Atlases were published in great numbers since Matthew Carey's *General Atlas*, 1794. Especially famous is Henry S. Tanner's *New American Atlas*, 1823. The two Tanner brothers, John Melish, Samuel Augustus Mitchell, and later the Colton family, were especially productive.

Wax engraving was invented by Sidney Edwards Morse; his *Cerographic Atlas* appeared in 1841. This method, with its stamped-in names and mechanical appearance, imprinted its style upon American cartography for a century. More individual maps were produced by lithography, which was introduced around 1827. The county atlases of the second half of the 19th century are typical American products, and their production became a national industry.

The early explorations and mapping of the rapidly expanding country were chiefly due to the army. William Clark's map of 1810 of the Lewis-Clark transcontinental expedition; Major Stephen H. Long's map of the Platte River; Benjamin L. E. Bonneville's map of the Great Basin; Joseph N. Nicollet's map of Minnesota; John Charles Frémont's map of the West are just a few witnesses to the outstanding work of these men under constant danger from Indians.

The westward migration of people was preceded by the host of surveyors commissioned by the General Land Office to make township plots. These men did remarkable work in incredibly short time, but often characterized more by speed than accuracy.

The Coast Survey was established in 1807 under the directorship of Ferdinand Hassler of Switzerland; the first charts, however, did not appear until 1845. This office is responsible for the leveling and triangulation of the country, and since 1878 it has carried the name United States Coast and Geodetic Survey.

The many competing surveys of the West were collected in 1878 into the United States Geological Survey, which is in charge of the

LA COSA  
1500

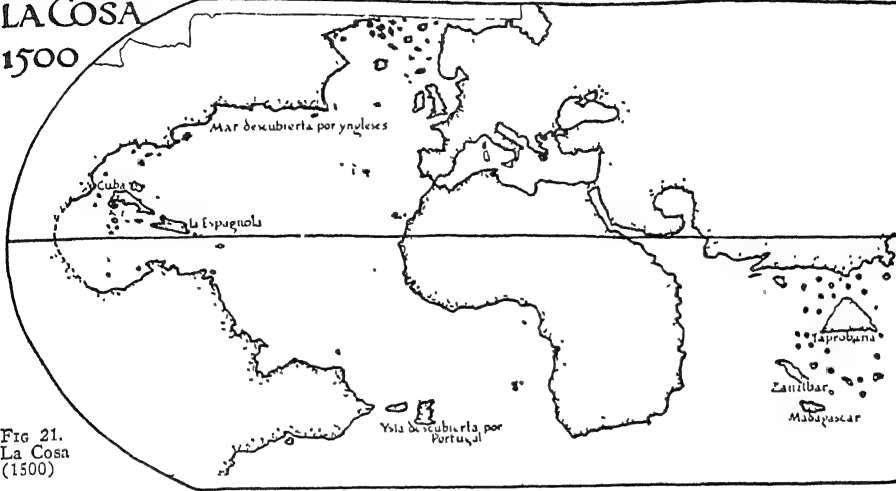


FIG. 21.  
La Cosa  
(1500)

CONTARINI 1506

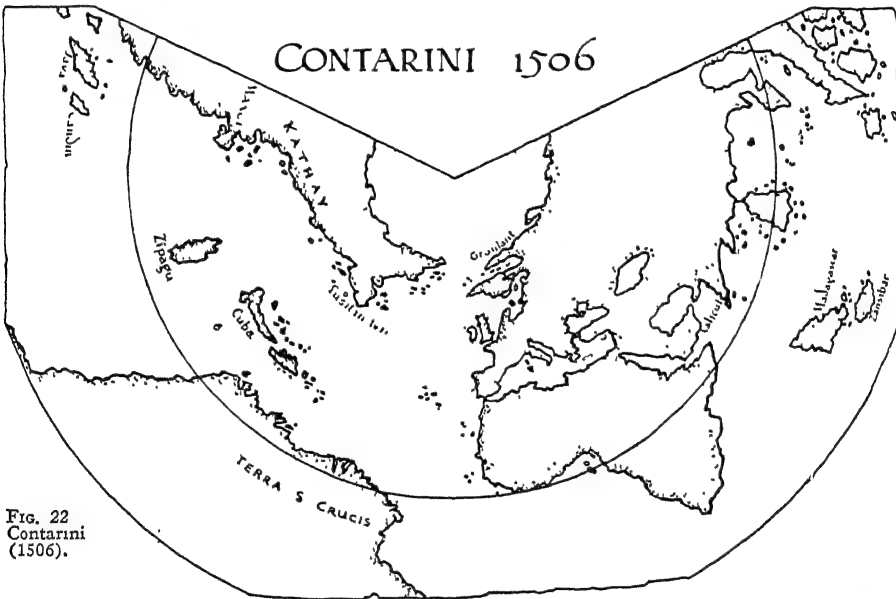


FIG. 22  
Contarini  
(1506).

WALDSEEMÜLLER 1507

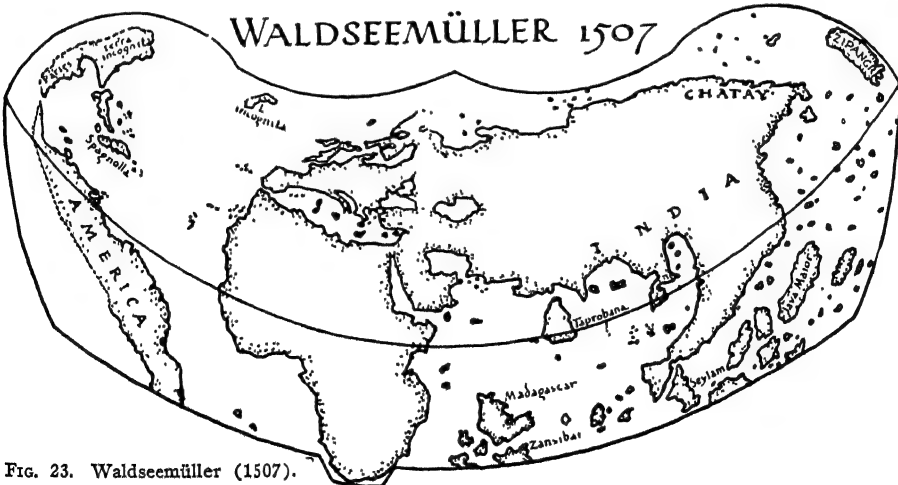


FIG. 23. Waldseemüller (1507).

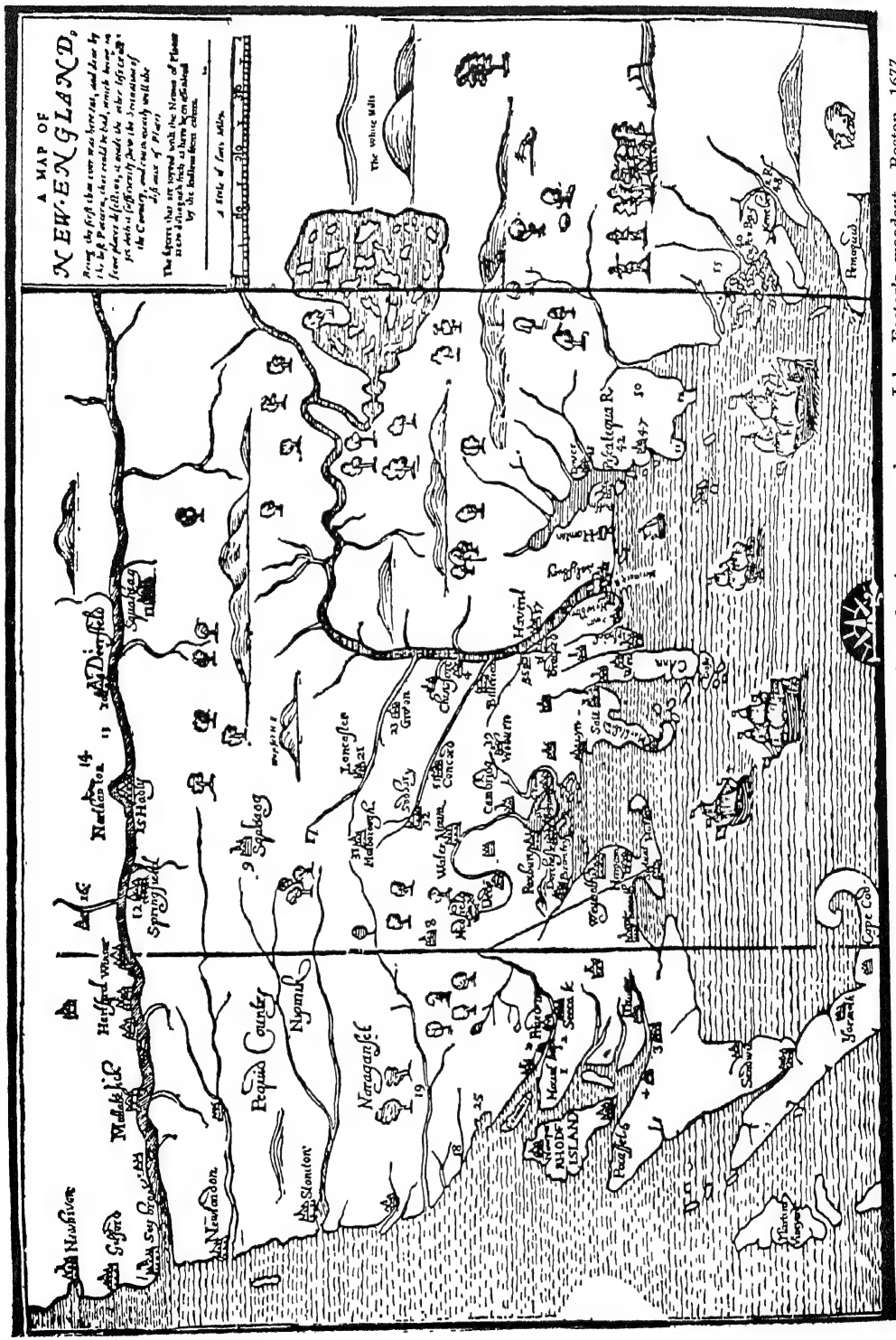


FIG. 24. The first map drawn, engraved, printed and published in the American colonies. John Foster's woodcut, Boston, 1677.

topographic mapping of the country. At the beginning of the Second World War less than half of the country was topographically surveyed. The coverage, however, was greatly expanded by the United States Corps of Engineers in recent years.

Before the war, 24 federal agencies in Washington alone produced all kinds of special maps. Add to this the maps of the various local and state agencies, the number of official maps produced yearly runs into the hundred thousands. Even this production was superceded during the war, when the Army Map Service, the Coast and Geodetic Survey, and the navy produced maps especially of foreign countries with unprecedented speed. Much of this work was aided by airplane photography.

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**MAPES**, māps, Victor, American playwright: b. New York, 10 March 1870. He was graduated from Columbia in 1891, was dramatic critic of the *New York World* 1898-99 and manager of New Theatre Chicago (1906-07). He wrote *Duse and the French* (1897); *Partners Three* (1909); *Gilded Way* (1911); and directed *The Tory's Guest* (1900); *Don Caesar's Return* (1901); *The Detective* (1908); *The Boomerang* (with Winchell Smith, 1915); *The Amethyst* (1925). D. 27 Sept. 1943.

**MAPLE**, a genus (*Acer*) of trees, together with a few shrubs of the family *Aceraceae*. The species, of which there are about 100, are indigenous to the north temperate zone, being best represented in China, Japan, United States and Canada. They are characterized by opposite, palmate or lobed, exstipulate leaves; small polygamo-dioecious flowers in axillary corymbs or racemes; and compound, one- or two-seeded, long-winged nuts (samaras). The maples constitute one of the most widely useful genera of trees, being extensively employed for ornamental and street planting and for windbreaks, while the wood serves well for toolhandles, furniture, flooring and many other purposes. The flowers are rich in nectar and are sought

by bees. Most of the species thrive best upon rich moist land suitable for agricultural purposes and are considered an indication of the type of soil. A few grow in wet land, and many upon mountain sides. They are readily propagated by means of seeds which, in the case of the early maturing kinds, should be sown as soon as ripe, the later ones in autumn or spring, being stratified in sand during the winter. Some choice varieties are grafted or budded and others may be increased by cuttings and layers.

In America, the best known, most widely planted and otherwise most important species is probably the rock or sugar maple (*A. saccharum*), a stately round-headed, gray-barked tree, often attaining heights of 120 feet. It is especially characteristic of rich woods from Maine to Michigan and southward in the mountains to Georgia, everywhere being noted for the rich colors of its leaves in autumn. Besides great popularity for all the purposes mentioned above, some of the trees are highly prized for their wavy-grained wood, which, being of satiny appearance and capable of high polish, is used under the name of curly maple often as veneers for choice furniture. It is further the most important of the species which yield a saccharine sap, and is a chief source of maple syrup and sugar, to obtain which the trees are "tapped," the sap caught in buckets and evaporated. A yield of three pounds per tree annually is considered very profitable; six pounds or even more is often obtained from many specimens whose sap is either especially abundant or particularly rich in sugar. If properly done no injury results to the trees. A form of the sugar maple, the black maple (*A. saccharinum* var. *nigrum*), so called from its very dark bark, is considered a distinct species (*A. nigrum*) by some botanists. It has the same range and habitats as the preceding and in nearly every respect the same uses, including sugar production. This form is more abundant than the preceding in the Central States.

The silver maple (*A. saccharinum*) is a widely spreading tree which attains a height of 120 feet throughout the same range as the above species. Being very ornamental in form and particularly also because of its graceful leaves, which are silvery white beneath, this tree is widely planted where rapid growth and quick effects are desired. Its chief fault is its brittleness; it quickly succumbs to high winds. It will succeed upon a wide variety of soils. Its sap, though rather sweet, is less useful for sugar than the above-mentioned species.

The red, scarlet or swamp maple (*A. rubrum*) attains heights similar to the above, has about the same range, but is most frequently found in wet ground. It is named from the brilliant color of its flowers, which are borne profusely in early spring before the leaves appear and from its red fruits which appear soon after. Being of good habit it is widely planted for ornamental purposes upon all kinds of soils. Its wood is used for most of the purposes enumerated above.

The Norway maple (*A. platanoides*) is somewhat smaller than the preceding species, being more compact and umbrageous. It is widely planted in private grounds and in parks, but is less valuable for street planting than the above because of its shorter trunk. It is a native of Europe. The sycamore maple (*A.*



*pseudo-platanus*), another European species, is smaller still, attaining only about 70 feet. It is also widely planted in America as well as in Europe, being a vigorous, rapid grower and succeeding upon a great variety of soils. The common maple (*A. campestre*) occasionally attains 50 feet, but is usually a smaller tree or even a shrub. It is of European origin and is widely planted.

The Japanese maple (*A. japonicum*, *A. palmatum* and other species) are small trees or shrubs which because of the great diversity of form of their leaves and their dainty habit have become widely popular in the parks and gardens of the United States and Europe. Their exceptionally brilliant autumnal coloring is taken advantage of in Japan where in the fall they approach the chrysanthemum in popularity.

The maples furnish food for a large number of insects, some of which live upon the green parts and others upon the wood. Several species of scale insects (q.v.) are often abundant enough to do considerable damage. The cottony maple scale (*Pulvinaria innumerabilis*), *Pseudococcus aceris*, a European insect, and the "gloomy" scale (*Aspidiotus tenebricosus*), a southern species, are among the most troublesome. Several caterpillars live upon the leaves, the forest tent caterpillar (*Malacosoma disstria*), the fall web-worm (*Hyphantria cunea*), and the larvæ of the tussock moth (*Orgyia leucostigma*), being the most generally important. The maple worm (*Amsota rubicunda*) is frequently very destructive. It is the larva of a moth. Of the borers, the larvæ of *Dicerca diversicata* and *Glycobius speciosus*, which are beetles in the adult state, and those of *Ægeria acerni*, a clear-winged moth, are among the best known. The second beetle mentioned is known as the sugar maple borer. Consult Bailey, 'Standard Cyclopædia of Horticulture' (New York).

**MAPLE SUGAR INDUSTRY**, a trade term, in common use, pertaining to the manufacture of sugar and syrup from the sap of rock or sugar maple, *Acer saccharum*. This production is classed under 'Agriculture' by the United States Census Bureau, and note was made of its importance at a very early day in the history of the government. The product is strictly confined to North America and the greater part to more or less limited areas in each of the geographical divisions known as New England, Middle Atlantic and Central-Western States, and Canada bordering on the North. Ten States—Maine, New Hampshire, Vermont, Massachusetts, New York, Pennsylvania, Ohio, Indiana, Michigan, and Wisconsin—produce approximately 97 per cent of all the maple sugar and maple syrup produced in the United States. New York and Vermont are the leading producing States. According to the U. S. Department of Agriculture, the output of maple sugar and of maple syrup, expressed in terms of sugar, was as follows: 1917-20 average—43,155,000 pounds; 1921-25 average—30,972,000 pounds. Production in 1937 totaled 990,000 pounds of sugar and 2,562,000 gallons of syrup, these two items bringing the total cash income for the year up to \$3,877,000 as against \$3,245,000 in 1936.

In Canada the manufacture of maple sugar and syrup assumed a relatively high importance

compared with the production in the United States. The Canadian production in 1937 was 4,413,147 pounds of sugar, and 1,232,069 gallons of syrup. Of this aggregate Quebec is credited with 4,020,000 pounds of sugar and 780,000 gallons of syrup; Ontario with 231,427 pounds of sugar and 439,711 gallons of syrup. Smaller quantities were produced in other provinces—in Nova Scotia 45,240 pounds of sugar and 6,787 gallons of syrup, and in New Brunswick 116,480 pounds of sugar and 5,571 gallons of syrup.

**History.**—Maple sugar and syrup was made at an early day by the pioneers of New England and Canada. It may have been a product of "necessity, the mother of invention," or an inheritance from the Indians, who had a spring-date of *sugar-making moon*, but, in either event, the first methods employed were crude, and the article was dark in color and not attractive. Moreover, tapping trees with an axe tended to denude the forest of its maples, and the whole *modus operandi* was wasteful in the extreme. The sap was caught in troughs, hewed out of logs, thence carried in pails to the boiling place and reduced to syrup in potash kettles. These kettles of the 18th century, or earlier, would be a curiosity at this day. They were suspended by chains from a horizontal pole, supported by forked or crossed sticks at each end, and surrounded by a blazing open fire. The camp-kettle, captured from General Burgoyne at the battle of Saratoga, 17 Oct. 1777, preserved in the Bennington Battle Monument, is a fine illustration of what these kettles resembled. Primitive ways, however, did not long continue. Improved methods, both as to tapping the maples,—leading up to the use of metal spouts,—and refining sap, followed one another, until now modern scientific principles prevail; and it is possible to reduce the sap to sugar or syrup, using evaporators, almost immediately, so that its color is nearly white, flavored only with the delightful aroma of the maple.

**Adulteration.**—Reliable authorities assert that prior to the passage of the National Pure Food and Drugs Act, and before the Federal Government inaugurated its crusade against misbranding, certain sugar refineries made much more sugar and syrup, labeling it "maple," than the entire natural production. This practice, however, has been suppressed, and though much maple syrup is sold to concerns which blend it with cane syrup no attempt is made in marketing the product to deceive the public, the labels simply stating that the article within the container is a syrup made by blending cane and maple syrups.

**MAPLESON**, mā'pl-sŏn, James Henry, English operatic impresario: b. London, 4 May 1830, d. there, 14 Nov. 1901. He was educated at the Royal Academy of Music, London. In 1878 he toured America with an Italian opera and later toured with several great singers.

**MAPLEWOOD**, Mo., city adjoining St. Louis, of which it is a residential suburb. Government commission. Pop. (1930) 12,637; (1940) 12,875.

**MAPLEWOOD**, N. J., township in Essex County, alt. 134 feet, on the Delaware, Lackawanna and Western Railroad, 16m W. of New York. It is a residential suburb of New York

and Newark, and has no important industries. Its government is administered by a township committee. It has a public library Pop. (1930) 21,321, (1940) 23,139.

**MAPPA, Adam Gerard**, Holland-American soldier and pioneer type founder · b. Delft, Holland, date unknown, d. Olden Barneveld, N. Y., April 1828 As a young man he entered the military service of his native country, gaining "marked distinction as a brave and enterprising officer" About the time of his marriage (1780) he left the Dutch service and engaged in the business of type founding This business was interrupted by political storms which disturbed the province of Holland in 1786-87 Colonel Mappa again took up the sword and became "one of the leaders of the Dutch Patriots, being commander of the armed citizens in the Province of Holland" "After keeping The Hague in a state of alarm with his small band of patriots alone, he was overwhelmed with numbers." And on 9 Oct 1787 he was obliged to disband his men With 14 others he was banished forever from Delft.

At the request of his republican friends he went to the court of Versailles to solicit countenance and co-operation But Louis XVI had troubles enough of his own, and as the prospects of the civil liberty being established in his own country grew fainter, Colonel Mappa decided to move with his family to America. On 1 Dec 1789 they arrived in New York The time between his expulsion from Holland and his landing in America was spent with other Dutch political refugees at the Chateau de Watte near Saint Omer.

While in Paris, Colonel Mappa became acquainted with Thomas Jefferson, then American Ambassador to France, who advised him to take to America a type-founding plant, there being then no such industry on the western side of the Atlantic Accordingly Colonel Mappa brought with him a complete "letter foundry" embodying not only the "Western but Oriental languages" as well. The outfit was valued at something like £3,500 New York currency Up to this time all printers had been obliged to purchase their type in England or Scotland The following January (1790) Francis Adrian van der Kemp, a fellow refugee, wrote to his friend, John Adams, then a political power and later President, suggesting that the Congress impose a tax on all foreign type to encourage and protect Mappa's infant industry.

Where he set up his type foundry at first it is perhaps impossible to say. A New York directory of 1792 makes mention of him as doing business at 22 Greenwich street. The infant industry was not prosperous as letters from Mrs Mappa to her friends plainly indicate. So on 1 Feb. 1794 he advertised his "type manufactory for sale." In the following summer, 1794, Colonel Mappa moved to Olden Barneveld, later Trenton, now Barneveld, and became the resident agent for the Holland Land Company, for more than 30 years until the time of his death. Here he built the stone mansion which still stands unharmed for the years and which in his day was often the gathering place of noted pioneer families of central New York.

**MAPU, mā'pō, Abraham**, Hebrew novelist: b. Kovno, 1808; d. 1867 At an early age he became noted as a Talmudist He studied Latin and the classics of that language exerted a lasting influence on his literary endeavors. He was also well acquainted with French literature and in 1848 was appointed professor in a Jewish school at Kovno From this time dates his devotion to Hebrew literature. In 1852 appeared his novel 'Ahabat Zéyon' (Love of Zion), the forerunner of the romance movement in 19th century Hebrew literature. It became very popular although orthodox rabbis assailed it as a profanation of the Leshon Quodesh or Holy Tongue. In 1865 Mapu published another historical novel, 'The Transgression of Samaria.' In 1887 an English translation entitled 'Amnon, Prince and Peasant' was published by F Jaffe Other works of Mapu are 'The Hypocrite' (1859-69); Hebrew manual; Hebrew grammar, and a Hebrew textbook for the study of French. Consult Slouschz, N., 'The Renaissance of Hebrew Literature' (1909)

**MAPURITO, mā-poo-rē'tō**, one of the Mexican white-backed skunks See SKUNK.

**MAQUI, ma'kē**, an evergreen shrub of the family *Elaeocarpaceae*, found in Chile, from the juice of whose acid fruit the Chileans make a wine given to persons ill with a fever Its wood is employed in making musical instruments and its bark furnishes strings for them. It is the best-known species of the genus *Aristotelia* (*A. maqui*), and is cultivated as an ornamental shrub in Europe

**MAQUOKETA, ma-kō'kē-tā**, Iowa, city, county-seat of Jackson County, on the Maquoketa River and on the Chicago, Milwaukee, St Paul and Pacific and the Chicago and North Western railroads, 42 miles north of Davenport. It is in an agricultural section; valuable limestone quarries are in the vicinity and not far distant are forests which furnish excellent hardwood timber. Its chief manufactures are flour, lime, woolen goods, brick, tile, foundry and machine-shop products and wooden-ware. It has an extensive trade in manufactured articles, farm products and livestock It has county buildings, several churches and schools and the Boardman Library Institute There are two semi-weekly newspapers and good banking facilities. The city owns and operates the waterworks. Pop 3,595

**MARA, mā'ra**, in old Runic, a goblin that seized on men asleep in their beds and took from them all speech and motion In Russian it was called *kiki-mora*, or ghosts. In Hindu mythology Mara is the ruling spirit of evil; the tempter mentioned by Edwin Arnold in his 'Light of Asia' Mara is also frequently identified with the incubus and with nightmare (qq.v.)

**MARABOU, mār-a-boo'**, a large African pink-white pouched stork (*Leptoptilus crumenifer*), which resembles the adjutant (q.v.) of India in appearance and habits. It gives its name to the soft and drooping feathers (coverts) which cover the root of the tail and are prized for millinery and other ornamental purposes; a large part of the "Marabou feathers" sold, however, are derived from the Indian adjutant.

**MARABOUTS**, mǎ'a-boots, **MARABOOTS**, or **MARABUTS**, Mohammedan Arab hermits or devotees, leading a secluded religious life or occupying a religious station in northern Africa. They have great influence among the Berbers and distribute amulets, affect to work miracles and are thought by their followers to exercise the gift of prophecy. Throughout the Barbary States the tombs of the Marabouts are conspicuous objects, being generally built in the open country and regarded by the people with much reverence. Some of them have degenerated into religious tramps.

**MARACAIBO**, mǎ-ra-kí'bō, Venezuela, capital of the state of Zulia, situated on the strait that connects Lake Maracaibo with the Gulf of Venezuela. It has a large and safe harbor, and maintains commercial relations with foreign markets, with the interior and with Colombia. Hundreds of small craft, suitable for shallow waters, carry on the trade of the coast and rivers tributary to the lake. The most important buildings are the Executive Mansion, the public market, Legislative Palace, municipal building, Baralt Theatre, university, churches and the prison. The public plazas contain statues of the patriot, Gen. Rafael Urdaneta, and Don Rafael Baralt, author of a history of Venezuela, who was born in Maracaibo and became a member of the Royal Spanish Academy. There is a dockyard for the construction of sailing-vessels and the city has electric lighting, telegraph and telephone service, submarine cable, street railways, etc. In the last few years rich deposits of petroleum have been found along the shores of Lake Maracaibo, which has resulted in increased activity in the city, and made Maracaibo one of the most important petroleum export centres of Latin America. Petroleum, coffee, cocoa and hides are the chief exports, which have an average annual value of \$2,300,000. Maracaibo, at first called Nueva Zamora, was founded in 1571 by Alonzo de Pacheco. This city is the starting point for passenger and freight steamers and rail lines. Pop. about 110,000.

**MARACAIBO**, Gulf of. See **VENEZUELA**, GULF OF.

**MARACAIBO**, Lake of, Venezuela, in the northwestern part, connected with the Gulf of Venezuela by a strait about 50 miles long and from 8 to 15 miles wide. The lake lies between 9° and 11° N. lat. and 71° and 72° W. long., and is about 100 miles long from north to south and 80 miles across the widest part. At the mouth it is about 500 feet deep, but at its head it is shallow and the land near the shore is marshy. Large vessels cannot enter because of a bar at its mouth which leaves only from 8 to 13 feet of water. A number of rivers flow into the lake and keep it fresh, but when strong north winds prevail it becomes brackish. The tides do not affect the lake to any very great extent although it is a marine inlet. It was once much larger than at present, as the shore-marks indicate, but the basin has been filled in. Petroleum deposits have been discovered along its shores and are being extensively developed. See **VENEZUELA**.

**MARAJÓ**, mǎ-rǎ-zhō' (called also Joanes), Brazil, an island at or between the deltas that form the mouths of the Amazon and Para rivers; area, about 14,000 square miles. From

east to west the greatest dimension is 162 miles and 110 miles north and south. The greater part is low; in the centre are several lakes. In the north and west are swamp lands and in the east and south forests, the rubber tree predominating. The chief settlement is Saure on the eastern coast. There are not many residents, as in the rainy season nearly the whole island is flooded. Cattle raising and gathering rubber are the chief occupations.

**MARAL**, the red deer of Persia.

**MARANHAM**, mǎ-rǎn-yañ, or **MARANHÃO**, Brazil, a maritime state, just south of the Equator, bounded on the north by the Atlantic Ocean; area, 177,515 square miles. The surface is uneven, but there is no range of mountains. There are numerous rivers flowing into the Atlantic, large forests, extensive plains where cattle are reared; the climate is fine and the soil fertile. The Paranyba is the principal river, being 700 miles long, with several large tributaries. The Gurupy, the Mearim and the Itapicurú are each about 500 miles in length. Agriculture has only begun; the emancipation of the slaves, on whose labor the state had depended, was followed by a period of great depression. Cotton, sugar and rubber are the principal products. Coffee, rice, corn, cacao and tropical fruits grow luxuriantly. The population is not great enough to properly develop the rich natural resources, there being only 49 persons to the square mile. Efforts are being made to colonize different sections, but the hot climate is not attractive. The present inhabitants are chiefly of Portuguese descent; but there are about 20,000 Indians and a few hundred negroes and mulattoes. The capital is Maranhã. Pop. about 1,200,000.

**MARANHAM**, or **SÃO LUIZ DE MARANHÃO**, san loo-ēzh' dō ma-rañ-yan', Brazil, capital of the state of Maranhão, on an island on the bay of São Marcos and between the mouths of the Itapicurú and Mearim rivers. The first settlements were made by the French in 1612. The ground is low and the climate warm but the place is healthful. The harbor, once good, is filling with sand, and little or nothing is done for its improvement. It has considerable trade, the imports and exports totaling \$600,000 annually. The chief exports are cotton, sugar, hides, rubber, cotton-seed and the skins of goats. Wool is woven and rugs and felt manufactured. The chief imports are machinery and clothing. The city has many fine buildings, public and private. Pop. including the suburbs, about 60,000.

**MARANHÃO**. See **MARANHAM**.

**MARASCHINO**, mǎ-rǎs-kē'nō, or **MARASQUINO**, a fine liqueur prepared from the sour cherry of southern Europe (*Prunus mahaleb*). The best-known kinds come from Dalmatia and from Corsica. There are other brands that use the name.

**MARASMUS**, a vague term denoting general emaciation or atrophy with no special cause apparent; now used in relation to the wasting of infants due to malnutrition combined with unhygienic surroundings. See **CHILDREN**, DISEASES OF.

**MARAT**, Jean Paul, zhōñ pōl mǎ-rǎ, French revolutionist; b. Boudry, Neuchâtel, Switzerland, 24 May 1744; d. Paris, 13 July 1793. He

studied medicine in Paris, traveled widely and practised in London and later in Paris. The first breath of the Revolution converted the indolent doctor into an audacious fanatic and demagogue. He succeeded, by his violence and energy, in commanding attention. Danton instituted the club of the Cordeliers and collected around him all the fiercest spirits; among the number, Marat, who became the editor of the *Publiciste Parisien*, better known under its later title *L'Ami du Peuple*, again changed to the *Journal de la République Française*. This sheet was the oracle of the mob. Denounced to the Constitutional Assembly and proceeded against by the municipal authorities of Paris, he contrived to escape to London and was later in hiding in Paris. During the existence of the Legislative Assembly he continued his outrages, figured among the actors of 10 August and in the assassination of September (1792). He was a member of the Committee of Public Safety to the convention and made the Ministers, General Dumouriez and the Girondists, the objects of his attack. Being charged in the convention with demanding in his journal 270,000 heads, he openly boasted of that demand and declared that he should call for many more if those were not yielded to him. The establishment of the revolutionary tribunal and of the committee for arresting the suspected was adopted on his motions. On the approach of 31 May, as president of the Jacobin Club, he signed an address instigating the people to an insurrection and to massacre all traitors. Even the Mountain party denounced this measure and Marat was delivered over to the revolutionary tribunal, which acquitted him; the people received him in triumph, covered him with civic wreaths and conducted him to the hall of the convention. His bloody career was closed by assassination (See CORDAY D'ARMANS, CHARLOTTE). His remains were placed in the Pantheon, whence they were later removed. Consult Chevrement, 'Jean Paul Marat' (1881); Bat, 'Jean Paul Marat, the People's Friend' (1901); Velay, C., 'Correspondance de Marat' (Paris 1908).

**MARATHI.** See MAHRATTAS

**MARATHI LANGUAGE AND LITERATURE.** Marathi is one of the principal vernaculars spoken in India. It bears a close affinity to Sindhi and Gujarati and is spoken by about 20,000,000 people. There are several dialects of it, named, respectively, Konkani and Dakham. The latter is the standard dialect and circulates in the Deccan, the former in the coast region of the Mahrattas and shows a large admixture of Dravidian, while in the district around Goa (a Portuguese possession) it also contains many Portuguese expressions and phrases. Besides, Marathi as a whole has a rather strong infusion of both Arabic and Persian words. All the same, modern Marathi has departed less from the original Sanskrit than most other Prakrits, being a direct descendant from the Maharastrī of the Middle Ages. A stock of its vocables are taken from Sanskrit itself, the so-called *tatsamas*. There are three genders in Marathi, the only one of the Prakrits that has retained this feature of Sanskrit. Konkani literature was destroyed by the Portuguese inquisition.

Marathi literature is abundant. It took its

inception with Namdev in the 13th century, who wrote descriptive and didactic poems of a religious cast. Tukaram, the most famous of Marathi writers (A.D. 1609), published writings showing Vishnuic convictions. Mayur Pandit in the 18th century also wrote many poems, epic, lyrical and descriptive. Marathi lends itself most readily to rhyme, and there are current among the Marathi people many rhymed proverbs, both pithy and fanciful. In prose not much of consequence has been produced.

**Bibliography.**—Godbole, W., 'Selections from the Marathi Poets' (Bombay, 5th ed, 1864); Joshi, B. Singh, 'Comprehensive Marathi Grammar' (Poona 1900); Maffei, A. F. Z., 'Grammar' (Mangalore 1882); Manwaring, F., 'Marathi Proverbs Collected and Transcribed' (Oxford 1899); Mitchell, J. Murray, 'Chief Marathi Poets' (London 1892).

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**MARATHON**, mār'a-thōn, Greece, an ancient village in Attica, about 20 miles northeast of Athens. It was situated on a plain which extends for about six miles along the sea shore, with a breadth of from one and a half to three miles. The site of the ancient village was not probably that of the present Marathon, but at a place now called Vrana, a little farther south. Through the centre of the plain runs a small brook. Here was fought the great battle between the Athenians and Persians, 490 B.C. (See MILTIADES). A tumulus or «soros» on the plain marks the burial-place of the Athenians who died in battle. It was excavated by the Greek Archaeological Society in 1890-91, and yielded many interesting relics.

**MARATHON RACE**, an athletic contest commemorating the feat of Pheidippides, Greek Olympic runner, who in 490 B.C., ran from Marathon to Athens to carry news of the defeat of the Persians by Athenians and Spartans and fell dead as he cried: «Rejoice, we conquer.» The distance run was 22 miles. The modern race, feature of Olympic games since 1896, is for a distance of 26 miles, 385 yards. For modern records see OLYMPIC GAMES, SPORTS, THEIR DEVELOPMENT, SPEEDS AND RECORDS.

**MARATTI**, mā-rāt'tē, or **MARATTA**, mā-rat'tā, Carlo, Italian painter and engraver: b. Camerino, 13 May 1625; d. Rome, 15 Dec. 1713. While a child he amused himself with painting all sorts of figures drawn by himself on the walls of his father's house. In his 11th year he went to Rome, studied the works of Raphael, of the Caracci and of Guido Reni in the school of Sacchi, and formed himself on their manner. His Madonnas were particularly admired. Louis XIV employed him to paint his celebrated picture of Daphne. Clement IX, whose portrait he painted, appointed him overseer of the Vatican Gallery. We are much indebted to him for the preservation of the works of Raphael in the Vatican and of the Caracci in the Farnese Palace. He also erected monuments to those masters in the church Della Rotonda. As an artist Maratti deserves the title given him by Richardson, of the «Last Painter of the Roman School».

**MARATTIALES.** See FERNS AND FERN-ALLIES

**MARAVEDI**, mār-a-vā'dī, the lowest denomination of old Spanish copper coins in use

from 1474 to 1848, varying in value from one-seventh to one-third of a cent. There were also, at an earlier period, maravedis of gold weighing 60 grains

**MARBEAU**, Jean Baptiste Firmin, zhôn ba-têst fêr-mân mar-bô, French philanthropist, founder of the day nursery b Brives, 18 May 1798; d. Saint Cloud, 10 Oct. 1875. He practised law in Paris, and in 1841, being deputed to inspect the charitable institutions of the first arrondissement of the city, planned the crèche or day nursery for the care of children of working mothers. The first crèche was opened 14 Nov 1844 at Chaillot; a Société des Crèches was founded in 1846; and his plan was described in his book, 'Des Crèches' (1845). Marbeau played a less prominent part in other charities and wrote on various problems of pauperism. Consult the 'Life' by Roussel (1876)

**MARBLE**, mâr'bl, Manton, American journalist: b Worcester, Mass., 16 Nov 1834; d. Maidstone, England, 24 July 1917. He was educated at the Albany Academy and the University of Rochester, being graduated from the latter in 1855. After spending seven years in the employ of Boston and New York newspapers he bought the *New York World*, on the staff of which he had been employed from 1858 to 1860. Marble was engaged in a controversy with President Lincoln concerning the publication of certain dispatches in the *World*. The latter journal was temporarily suspended from publication. Marble was one of the first to recognize and give publicity to the writings of Herbert Spencer. In 1885 President Cleveland sent Marble to the British, French and German governments as special envoy to discuss the subject of international bimetalism. On his return, after conferences with various European authorities, he advised the President that upon the co-operation of the United Kingdom, for which neither Tory nor Liberal leaders were prepared, depended the German and French resumption of free bimetallic coinage, and advised that United States purchase of silver should cease. Marble was one of the founders of the Manhattan Club and at one time the president of that organization. He belonged also to many literary and scientific societies, among them the Century Association, the Round Table, the Cobden Club and Metropolitan Club. He was the author of 'Letter to Abraham Lincoln,' 'The Presidential Counts,' 'A Secret Chapter of Political History' and a memoir of Alex. G. Mercer, which prefaced his 'Notes of an Outlook on Life'

**MARBLE** (from the Greek *marmairin*, to sparkle), a compact rock which, in its pure form, is composed entirely of carbonate of lime or limestone. In its best form it is a variety of calcite, the tiny crystal facets sparkling and flashing in the sun's rays; hence its ancient name. It is seldom found in perfect purity, the tractable qualities of the limestone allowing the introduction of many foreign substances during its formation. Thus there will be seen marble with streaks of various colors running through it, caused by the action of oxide of iron or other chemicals. Almost any limestone rock is commonly called marble, even certain varieties of granite, onyx, porphyry and rock largely composed of gneiss and mica-schist. True marble is a metamorphic equivalent of limestone,

from which it has been produced by heat or pressure, or both

Marble has been a favorite stone for forming into statuary and for decorative work in buildings and monuments, from the very earliest ages. The Greeks, who were the first to endow this lifeless stone with marvelous genius in their statuary and bas-reliefs, were blessed with an almost inexhaustible supply of the very finest and purest marble yet discovered, on the island of Paros, in the Aegean Sea. This marble, so celebrated as "Parian," possesses a peculiar waxy attribute which gave the statues formed from it a beautiful polish. The 'Venus de Medici' was made from this stone, which is almost perfectly white. The Parthenon was built of marble of Pentelicus, which was a little more finely grained. The marbles of Carrara were even then known but not generally put in use till later years, being still among the finest marble in the world, though having some gray streaks

In many other parts of Continental Europe and in Great Britain are quarries of fairly pure marble. America has a large supply of this useful stone. Each year new occurrences of it are found in the Rocky Mountains, some of them pure white, others with variegated colorings. Perhaps the finest example of these wonderful marbles of the Rockies is found in the new State capitol building of Colorado, at Denver. In the eastern part of the United States there are many quarries of marble which have been in use for many years. Vermont is probably the seat of the largest quarries. Little of this marble is finely grained and white enough to answer for the sculptor's use, but it is admirably adapted for ornamental purposes in architecture and for monuments for the dead. American sculptors still generally use the marbles from Carrara, though the merits of the American product are becoming known. Vermont, although one of the smallest States in the Union, exports more stone for commercial purposes than any other State, except one, Pennsylvania standing first. The money value of Vermont's stone product is approximately \$10,000,000 a year, a large part of it being in marbles of various grades.

The quarrying of marble is now carried on extensively, the use of machinery largely taking the place of the ancient hand methods. Fifty years ago the quarries of Rutland, Vt., still the largest in the world, were operated by ox teams and hand work of the crudest form. To-day, these vast quarries have an extensive outfit of electric cranes and derricks, which move the blocks of marble in any desired direction, easily and quickly, one of these traveling cranes having a carrying capacity for 100,000 pounds. The stone is too easily broken to permit the use of blasting powders of any kind. This method is used in some of the Italian quarries, but causes great waste of material and is most unsatisfactory. In the Vermont quarries, a machine called a "channeler" has been found the best for economical work and has been exclusively adopted. It consists of a row of long chisels set in a strong, traveling framework. This gang of chisels vibrate up and down, cutting a channel in any direction desired in the face of the marble ledge. The channel can be made any reasonable depth, according to the size of block desired. When this channel, or groove, is suf-



ficiently long and deep, the machine is reversed and cross channels are cut and the bottom perforated. Then wedges are carefully driven in behind the block of stone and it gently falls over, to be lifted by a crane to the railroad cars or to that part of the quarry devoted to further treatment of the output. As a rule, the stone is sent in its rough state to the purchaser, who dresses it himself. When the order is for monument work or some special design in architecture, the marble is treated at or near the quarry. In thus further treating the product, a toothless saw, or gang of saws, is used. The block of stone is placed on a horse, or platform, and the saws set at work, the size of the cut being gauged by setting the saws close together, or far apart, as needed. A stream of water in which is mixed sea sand or other sharp, hard sand, falls upon each saw. The friction of the iron blade, aided by the sand and water, quickly cuts up the marble into any desired shape. Some marble cutters use saws of wire, but the best seem to be those made of strips of soft iron one-sixteenth of an inch thick and, when new, four inches wide. The marble wears down one of the saw blades very rapidly. When the blocks are thus sawn into the requisite shapes by the power gang-saws, they are then placed on tables and ground down to size, a small piece of marble being rotated over them by hand or power, water flowing over the surface being ground. With surprising facility, the marble yields to this treatment. Polish, in the final stages, is given by rubbing with wood or other soft material, and finally cloth. Much hand work is, of course, necessary with the mallet and chisel and polisher, but all the rough, heavy work, which formerly made marble so costly and hard to obtain, is now done entirely by electric and steam power. One of the finishing rooms at the Rutland works, located at Proctor, Vt., is 1,000 feet long and contains scores of giant gang saws, cutting up the marble into various shapes. This plant, one of the largest in the world, has an output of \$3,000,000 annually and employs hundreds of men. Most of this output is of white marble, though brown, gray, green and other shades are found in profusion.

One ancient method of mining this delicate stone, still used entirely by the Mexicans in mining onyx, is to drill holes in a line, insert plugs of some porous wood, pour in water and allow the wood to swell. This gently forces the precious stone free, without the least injury.

One quality of marble, not usually recalled, is its ability to withstand great heat safely. In the devastating fire in 1903 at Paterson, N. J., buildings built of granite crumbled and perished. Those of marble still stand, almost as good as ever. Its use is, therefore, becoming more and more general in erecting fireproof buildings in the large cities, the floors and often the entire inside wall and ceiling being overlaid with it.

Some really fine examples of craftsmanship in this line are found in the public buildings of New York City and elsewhere in America, notably the new buildings of the Hall of Records and the Appellate Division of the Supreme Court, in New York. In the making of monuments for the dead, marble is most extensively used. The floors of bathrooms, tops of toilet tables, basins for washing hands and clothes, tiling of various sorts—all these and a thou-

sand other household purposes find in marble their chief exponent. Probably more than \$75,000,000 worth of finished marble products are used in the United States annually, made from domestic quarries entirely. See also *Rocks*.

**MARBLE FAUN, The.** The 'Marble Faun' was begun by Nathaniel Hawthorne during his visit to Italy in 1858 and was published in 1860. In England it was issued as the 'Transformation'. The scene is laid in Rome, but two of the four chief characters are Americans. The most interesting person in the story, however, is Donatello, a young Italian of noble birth who bears a strong resemblance to the statue of a faun by Praxiteles, and who, according to a tradition in his family, numbered a faun among his early progenitors. There are two women characters, of different types. Miriam is of a rich, full-blooded nature, and her past is bound up with some terrible mystery. Hilda, who is said to have been drawn with the writer's daughter in mind, was evidently intended as an example of the pure and self-contained New England maiden, but she has been aptly characterized by one critic as an "admirable little icicle." The romance is a study of the effects of a great guilt on these persons, and especially on Donatello, in whom it brings about the change referred to in the English title of the book. Hawthorne here seems to be considering the great question of the mission of sin in the world, but in the end the explanation which he allows one of the characters to suggest he makes Hilda reject with horror. The romance has serious technical defects. It contains an excess of traveler's descriptions, which, however excellent in themselves, have little to do with the story; and it fails to satisfy the curiosity which the author persistently arouses regarding Miriam's past. Dissatisfaction with the ending was so great that in a later edition the author added a chapter of explanation, which, however, he justly regarded as no improvement. The chief merits of the book lie in the conception of Donatello, in the elusive symbolism and suggestiveness which characterize all Hawthorne's best work, and in several impressive scenes. Some of these, like the meeting with the model in the catacombs and the visit to the church of the Capuchins where the murdered monk lies, have a more dramatic quality than is usual with Hawthorne.

WILLIAM B. CAIRNS.

**MARBLED GODWIT.** See *GODWITS*.

**MARBLED TIGER-CAT.** See *TIGER-CAT*.

**MARBLEHEAD, Mass.** town in Essex County; alt. 15 feet; on Massachusetts Bay; 17m. N.E. of Boston; on the Boston and Maine Railroad, included, under Salem, as a port of entry, 4th United States Customs District. The town is located on a double peninsula, with Point Light on the SE. projection, the «Neck.» There are yacht piers and a public landing. Fishing and boatbuilding are carried on, and Marblehead is one of the Atlantic coast's best known yachting centers; it also has many fine summer homes. In the middle decades of the 19th century the town bade fair to become an industrial city, making shoes, glue, rope, barrels,

and paint, but cities more strategically located captured the business. Marblehead has many old houses of historic interest. Abbot Hall contains the town administrative offices and the public library. In it is preserved the original of the famous painting by Archibald M. Willard (qv), 'The Spirit of '76'. The local art association has quarters in the old Town House (1727), and the historical society maintains a museum in the Jeremiah Lee mansion (1768). Settled in 1629 by fishermen from Guernsey and Jersey (compare Whittier's poem 'Skipper Ireson's Ride'), the town was until 1649 a part of Salem. In the Revolutionary War Marblehead privateers, the *Hannah* and the *Lee*, rendered noteworthy service. Pop. (1940) 10,856.

### MARBLES AND MARBLE PLAYING.

Marbles are small balls of baked clay, marble, agate or spheres of glass, used as toys and playthings for children. They are manufactured in large quantities in Saxony for exportation to the United States and to India and China. They were also largely manufactured in the agate mills at Oberstein on the Nahe, in Germany, for the American market. The material used in Saxony is a hard calcareous stone, which is first broken up into square blocks with a hammer. These are then thrown 100 to 150 together into a mill, which is a stationary flat slab of stone, with a number of concentric furrows upon its face. Over this a block of oak of the same diameter, partially resting upon the small stones, is kept rotating, while water flows upon the stone slab. In 15 minutes the marbles are worn completely round and are fit for sale. An establishment with three mills will manufacture 60,000 marbles in a week. Agates are made into marbles at Oberstein by first chipping the pieces nearly round with a hammer and then wearing them down upon the face of large grindstones.

The game of marbles is variously played; usually with a circular ring marked on the ground, the player taking one marble between the thumb and forefinger and dexterously shooting at other marbles within the circle, striking them with sufficient force to throw them outside the limits of the ring. This form is called ring-taw, and the marbles placed in the ring are apt to be clay ones, called "commys," which is probably short for "commons." A larger and better grade of marble is used for the "shooter." When a player misses a shot, it is then the turn of his opponent. Sometimes he also loses his turn when he drives his shooter outside of the ring. Play is often for "keeps," each boy winning what he knocks out. Another game of marbles is called "nine holes," though it may be played with a less number of holes. A row of small cup-shaped depressions are made in the ground, and the object is to toss or bowl one's marble into each hole in succession, the one accomplishing it with the fewest plays winning. Very likely golf had its fundamental idea in this simple game of marbles. In a variant form the boys shoot at other marbles to knock them into the holes, but their own shooter must not follow, under forfeit, suggesting the basic principle of the game of pool. "Hit and span" is another game much played. One player tosses his marble to a distance, and the other player tosses his marble as close to it as he can; if he hits it, it is keeps; if he comes within a handbreadth or span he makes a hit and scores one. Then

they reverse, and his opponent tries, the one making the most hits or points winning. This game can be played in walking along a country road, and appears to have been invented by boys who wanted to play on their way to school. In some games of marbles it is fair to toss or bowl the shooter; and in others the player must touch the large knuckle of his forefinger to the ground when shooting, and thus the boys call "knuckling down fairly." These games are subject to infinite change, according to the whim of the boys of a locality who play them. They make their own rules and pass them along to the smaller boys as they grow up. Girls seldom play marbles and adults are not supposed to play at all. Marbles can be played indoors in bad weather, one way being for the players to sit on a carpet, with their legs apart, so as to stop the rolling marbles; one places a marble between his feet and the other player shoots at it.

**MARBLING**, in bookbinding, the process of coloring paper or the edges of books, in imitation of the veining of variegated marble. In the case of a book, after the volume is formed, but before the cover is put on, the book leaves are trimmed and tied between two boards and taken to a trough or vessel, perhaps two inches deep, which is filled with clean gum water. Various colored pigments, ground in spirits of wine and mixed with a small quantity of ox-gall, are thrown upon the surface of the gum water, and disposed in various forms with a quill and comb, forming a variegated, marble-like pattern. When satisfied with the coloring mixture, the workman dips the edges of the book into the trough, and the colors adhere. Cold water is then dashed over the edges, to set the colors and bring them out clearly. Sometimes single leaves are marbled and placed just within the book cover, front and back, for ornamentation. Marbling was formerly quite common, but is now seldom used, solid colors, as red edges, being preferred, or gold edges. The deckle-edged book cannot be marbled, owing to its rough edges. See BOOKBINDING.

**MARBURG**, mar'boorg, Yugoslavia, town in Styria, 50 miles north of Zagreb, on the left bank of the Drave and on the Southern Railways, whose repair shops are a leading industry. Quantities of lumber, grain, wine and poultry are shipped. There are also shoe factories, cement works, flour mills and machine shops. Pop. about 23,000.

**MARBURG**, Prussia, a town of Hesse-Nassau, on the slopes of an acclivity above the Lahn, 46 miles north of Frankfurt. It dates from the 12th century. The principal buildings are the castles of the landgraves of Hesse, now partly used as a prison; the 13th century church of Saint Elizabeth; the town house and the celebrated Marburg University, founded in 1527, and having, in 1928, 164 professors and 3,293 students, and a library of 275,000 volumes. Here Luther and Zwingli debated on transubstantiation in 1529. It became a part of a Prussian province in 1866. The town has manufactures of machinery, leather, carpets, tobacco, pottery and toys. Pop. about 22,000.

**MARBURY v. MADISON**, a well-known decision in law handed down in 1803 by the United States Supreme Court. It is important as affording the earliest instance of the decla-

ration by the court that a Congressional statute is null and void by reason of its repugnance to the Constitution of the United States. Marbury was appointed justice of the peace in the District of Columbia by President Adams, but the commission, though drawn up, signed and sealed, had never been delivered. Madison, when he became Secretary of State, refused to deliver it. An act of Congress empowered the United States Supreme Court to issue to executive officers a writ of mandamus to force them to attend to their duties, and on the basis of this act Marbury brought suit. Now the Constitution nowhere mentions the right to issue a writ of mandamus among the cases of original jurisdiction by the Supreme Court. Chief Justice Marshall therefore decided against Marbury, and his argument, admittedly the only accurate one, established an important precedent which is found only in the courts of the United States.

**MARCABRUN**, mar'ka-breñ, a French troubadour: b in Gascony, about 1140, d. toward the end of the 12th century. He was a special favorite at the court of Alfonso VIII of Castile, where he seems to have been the chief of the royal troubadours. He was an extensive writer of love songs of which quite a number have survived to the present and have been printed.

**MARCASITE**, in mineralogy, an iron disulphide (FeS<sub>2</sub>), differing from pyrites in that it crystallizes in the orthorhombic system. It was formerly known as white pyrites, cellular pyrites, cockscomb pyrites, hepatic pyrites or leberkies, etc. It is usually a pale yellow, being thus lighter than true pyrites, but it has gray to brown-black streaks. When arsenic is present it is known as krosite. It is often found in clays, but is far less common than iron pyrites.

**MARCEL**, Etienne, ä-të-ën mar-sël, French political leader: b Paris, 31 July 1358. From December 1355 he was provost of the Paris merchants and actual ruler of the city. He put to death two officials of the Crown and finally persuaded the Dauphin Charles to act as regent while King John was held by the English. Not finding the Dauphin properly submissive, he obtained assistance from Charles the Bad of Navarre. He was killed during an uprising of the more wealthy and conservative citizens against his power. Consult Lazard, 'Un Bourgeois de Paris au XIV<sup>ème</sup> Siècle' (1890).

**MARCELINE**, mär-së-lën', Mo., city in Linn County; alt. 858 feet; 104m. NE. of Kansas City; on the Santa Fe Railroad. Railroad and mining have been its principal industries, but farming and food processing are advancing here. Walt Disney (see DISNEY, WALTER ELIAS) spent his boyhood years in Marceline. The city owns light and water supply systems. Pop. (1930) 3,555; (1940) 3,206.

**MARCELLINUS**, mär-së-lī'nūs, Saint: d. probably 25 Oct. 304. He was a pope who succeeded Caius in 296. The Donatists alleged that during the Diocletian persecution he sacrificed to idols. He was, however, vindicated by Augustine from this charge.

**MARCELLUS**, mar-sël'ūs, Marcus Claudius, Roman general: b. before 268 B.C.; d. near Venusia, 208 B.C. In 222 being consul with Scipio he twice defeated the Insubrians in northern Italy, and with his own hand killed

their king, thus winning the *spolia opima*. After the disaster of Cannæ in the Second Punic War (216), Marcellus took command, gained several slight victories over the Carthaginians and hence was named "the sword of Rome." Fabius Cunctator being called "the shield of Rome." His third consulship (214) was spent in Sicily, where he attacked Syracuse, and after a two years' siege prolonged by the skill of Archimedes captured the city. In his fifth consulate after two years of varying success against Hannibal in Italy he was killed in a skirmish near Venusia.

**MARCELLUS I**, Saint, Pope: d. 310. He succeeded Marcellinus and did not take office until 308. The Emperor Maxentius banished him from Rome for excommunicating an apostate and according to some authorities forced him to serve as a slave on the public highway. He suffered martyrdom under Maxentius.

**MARCELLUS II** (MARCELLO CERVINI, mar-chěl'lo chër-vē'nē), Pope: b in Tuscany, 6 May 1501; d. Rome, 6 May 1555. He was cardinal legate at Trent of Julius III, whom he succeeded in the pontifical chair. Although originally opposed to polyphonic music, he at once withdrew his opposition to it after listening to Palestrina's famous 'Missa Papæ Marcelli.' His pontificate lasted only 22 days.

**MARCELLUS STAGE**, in geology, a term introduced by the New York State Geological Survey for the thin rock, mostly shale, which is the lowest group of the Upper Devonian System, and which is most typically seen in New York State at the little village of Marcellus, whence the stage is named.

**MARCH**, Alden, American surgeon: b. Sutton, Mass., 1795, d. 1869. He was educated at Boston and at Brown University, receiving the degree of M.D. from the latter in 1820. From 1825 to 1831 he was a professor in the Vermont Academy of Medicine, from 1831 to 1833 at the Albany Medical Seminary, and in 1833-34 at the Albany Medical School. In the latter year he founded a school of practical anatomy in Albany and in 1839 founded the Albany Medical College, in which he was professor of surgery from the foundation until his death in 1869. Dr. March also founded the Albany City Hospital; was president of the New York State Medical Society in 1857 and founded the American Medical Association. Dr. March invented several surgical appliances and improved others. He published 'Wounds of the Abdomen and Larynx' (1854), and numerous papers in medical journals.

**MARCH**, Francis Andrew, American philologist: b. Millbury, Mass., 25 Oct. 1825; d. 1911. He was graduated from Amherst in 1845, studied law in New York in 1849-50, was admitted to the bar in 1850, in 1856 became adjunct professor of *belles-lettres* and English literature in Lafayette College (Easton, Pa.), and in 1857 professor there of the English language and comparative philology. In 1873-74 and 1895-96 he was president of the American Philological Association, in 1876-1903 of the Spelling Reform Association and in 1891-93 of the Modern Language Association. He was among the earliest advocates of a historical study of the English language and of a philological study of the classic works of that lan-

guage His contributions to the transactions and proceedings of the American Philological Association and other learned societies have been very extensive. He was a consulting editor of the 'Standard Dictionary,' and decided many spellings and forms for that work. He also edited the Douglass series of Christian Greek and Latin classics (1874-76), was director of the American readers for the great 'Historical Dictionary of English' of the London Philological Society, and published 'A Method of Philological Study of the English Language' (1865); 'Parser and Analyzer for Beginners' (1869); an 'Anglo-Saxon Grammar' (1870); an 'Anglo-Saxon Reader' (1870), an 'Introduction to Anglo-Saxon' (1871), 'Thesaurus Dictionary,' 5th edition, Philadelphia (1930).

**MARCH, Peyton Conway**, American soldier: b Easton, Pa., 27 Dec. 1864. He is a son of Francis A. March, the philologist. Graduating from Lafayette College in 1884, he determined upon a military career, and graduated from the military academy in 1888. The same year he entered the army as a lieutenant of artillery. Later he graduated from the Fort Monroe Artillery School. When the Spanish War broke out he volunteered, and commanded the Astor Battery in 1898, the following year he was major of the 33d Volunteer Infantry. He served in Luzon, in the Philippine campaign, and received several promotions for gallantry. He obtained the surrender of General Venancio Aguinaldo's chief of staff. For a time after the close of active hostilities he was a military and later a civil governor in Ilocos. In 1911 he was commissary-general in the Philippines; in 1916 he was a lieutenant-colonel of field artillery; the next year he was made a brigadier-general, and 5 Aug. 1917 he was raised to the rank of major-general. In 1918 he became Chief of Staff of the U. S. Army and in 1921 was retired.

**MARCH**, márh, Czechoslovakia, the principal river of Moravia, rising on the Silesian boundary, and flowing 214 miles southward to the Danube, which it joins six miles above Presburg. It is navigable for small boats from Goding, 50 miles from its mouth. In its lower course it forms the boundary between Austria and Hungary. Its chief affluent is the Thaya.

**MARCH**, in Europe, a frontier or boundary of a territory; especially applied to the boundaries or confines of political divisions; as, for example, the frontiers between England and Scotland, and England and Wales. Geneva is situated in the Marches of France, Savoy and Switzerland. See **MARCHES**, **THE**.

**MARCH** (Latin *Martius*), (1) the third month of the year, originally the first of the Roman year; so named in honor of the Roman deity Mars. Prior to 1752 the 25th of March was the first day of the legal year; hence, in all records, January, February and the first 24 days of March have frequently two years appended, as January 1, 170½ or 1701-2. (See **CALENDAR**). Until late in the 19th century, the custom of leasing dwellings from the 25th of March persisted in some localities. (2) A movement by regular steps in the manner of soldiers; also a journey performed by a body of soldiers either on foot or on horseback. Soldiers on a march are subject to certain rules very necessary to keep them in good order, and

fit to meet the enemy. The march in the first sense of regular step differs on different occasions. In the parade-march from 75 to 95 steps, each of about 30 inches, differing in different armies, are made in a minute; in the quick-march from 108 to 115 steps; and in the double quick 150 running paces. This last cannot be sustained for any length of time, and is only used in a charge, or in storming a commanding position, and in a few internal movements of regiments. (3) A musical composition, chiefly for military bands, with wind instruments, primarily intended to accompany the marching of troops. There are slow and quick marches, and marches peculiar to different countries. Marches are also introduced into oratorios, the best-known examples being the 'Dead March' from the oratorio of 'Saul' and Mendelssohn's 'Wedding March.' See **MUSIC**.

**MARCH FLIES**, small, hairy, scavenging flies of the family *Bibionidae*, seen numerously in early spring, often before the snow has disappeared. The species are over 300, and some appear in vast swarms. The maggots hatch in refuse or manure upon the ground, and are believed to feed upon grass-roots.

**MARCH TO THE SEA**. There were two plans for a march to the sea by Sherman's army, the first General Grant's, the second General Sherman's, modifying the first. A campaign to the sea to divide the Confederacy was decided upon by General Grant in January 1864, when he was in command of the Military Division of the Mississippi, with headquarters at Nashville. His objectives on the coast were first Mobile, second, Savannah, Atlanta being the intermediate objective for both. Sherman's army was then in the vicinity of Chattanooga, Tenn., and Ringgold, Ga.

In a letter to General Halleck, dated at Nashville, 15 Jan. 1864, General Grant wrote: "I look upon the next line for me to secure, to be that from Chattanooga to Mobile, Montgomery and Atlanta being the important intermediate points." This he repeated on 19 January to General Thomas, then in command of the Army of the Cumberland at Chattanooga, and this officer immediately began to gather information, which General Grant desired, of the number of troops necessary to guard the roads and bridges from Nashville to Atlanta. These preparations were entrusted to General Thomas, as General Sherman was engaged with his Meridian campaign. In this connection, General Thomas expressed his confidence in being able with the Fourteenth and Fourth corps in advance, covered with a strong division of cavalry, and the Eleventh corps in reserve, to overcome all opposition as far as Atlanta.

When Grant was made lieutenant-general and ordered east to command all the armies, he called Sherman to Nashville, and they traveled together as far as Cincinnati. General Sherman was then made acquainted with the plans already set forth. As part of these plans, before leaving Nashville General Grant ordered Banks to concentrate at least 25,000 men to move against Mobile in the spring in co-operation with General Sherman.

In addition to letters to each of the commanders interested — Halleck, Sherman, Thomas and Banks — General Grant, 26 March 1864, sent all army commanders a map upon

which was indicated by red lines the territory occupied by the Union forces at the beginning of the war, and at the opening of the campaign of 1864. The territory which it was proposed to occupy by the campaigns about to begin was indicated by the blue lines. This map reached General Sherman 4 April, and its receipt was acknowledged by him. This map is reproduced in the Atlas of the 'Official Records' of the war, being plate 135 A of that publication. For Sherman's proposed campaign the blue lines extend from Chattanooga to Atlanta, and from this latter point both to Mobile and Savannah.

General Sherman, in acknowledging the map, said: "That map to me contains more information and ideas than a volume of printed matter. Keep your retained copies with infinite care, and if you have occasion to send out to other commanders any more I would advise a special courier. From that map I see *all*, and glad am I that there are minds now at Washington able to devise; and for my part, if we can keep our counsels, I believe I have the men and ability to march square up to the position assigned me, and to hold it."

As the result of the campaign for Atlanta General Slocum occupied that city 2 September. Meantime Farragut had taken possession of Mobile Bay 5 August. On 10 September Grant telegraphed Sherman from City Point as follows: "As soon as your men are properly rested, and preparations can be made, it is desirable that another campaign should be commenced. We want to keep the enemy continually pressed to the end of the war. If we give him no peace while the war lasts, the end can not be far distant. Now that we have all of Mobile Bay that is valuable, I do not know, but it will be the best move for Major-General Canby's troops to act upon Savannah, while you move on Augusta. I should like to hear from you, however, on this matter."

To this Sherman telegraphed in reply: "If you can manage to take the Savannah River as high as Augusta, or the Chattahoochee as far up as Columbus, I can sweep the whole State of Georgia, otherwise I would risk our whole army by going too far from Atlanta."

In a letter from Atlanta, dated 20 September, Sherman gave Grant the conditions under which he could successfully co-operate in a movement on Savannah: "If you will secure Wilmington and the city of Savannah from your centre, and let General Canby have command over the Mississippi River and the country west of it, I will send a force to the Alabama and Appalachicola, provided you give me 100,000 of the drafted men to fill up my old regiments; and if you will fix a day to be in Savannah I will insure our possession of Macon and a point on the river below Augusta."

General Grant thereupon conferred by letter with General Halleck in regard to establishing a base on the coast for General Sherman and providing supplies, giving his own opinion that Savannah could be captured by troops from the East assisted by those in the Department of the South, and that the line of Augusta and Savannah would be a better one than Montgomery, Selma and Mobile. Grant further said in this letter 4 October: "Whichever way Sherman moves he will undoubtedly encounter Hood's army, and in crossing to the sea-coast

will sever the connection between Lee's army and his section of the country."

General Sherman fixes the day after his letter of 20 September as the date when his plan of a march to the sea came first into his mind. It differed from Grant's plan based upon first disposing of Hood's army, in that it involved leaving Hood in his rear, to be taken care of by Thomas, and marching through to Savannah with no enemy in his front. Upon this plan a discussion arose with Grant, who for some time held to the necessity of first dealing with Hood. This discussion between Grant and Sherman lasted for several weeks. While it was in progress Hood became active. On 20 September Forrest's cavalry began vigorous operations about Athens and Decatur, Ala., and Pulaski, Tenn. Sherman at once sent troops to Chattanooga and 28 September General Thomas was ordered to proceed to Nashville to organize a force to meet a possible northward move of Hood. The first attempt of the latter was to break Sherman's communications by heavy movements upon his railroad. These met with only temporary success, as Sherman promptly pursued. The fighting at Allatoona 5 October was the most prominent affair. Hood then moved to the westward, and occupied Gadsden, Ala. Sherman again followed as far as Gaylesville. Sherman, 10 October, again proposed to Grant to leave Hood and march to the sea. Grant replied the same day. "If you are satisfied the trip to the sea-coast can be made, holding the line of the Tennessee firmly, you may make it, destroying all the railroads south of Dalton or Chattanooga as you think best." This condition of firmly holding the line of the Tennessee held Sherman for a time. Although this conditional permission had been given by Grant, he telegraphed Sherman 1 November: "Do you not think it advisable, now that Hood has gone so far north, to entirely settle with him before starting on your proposed campaign? With Hood's army destroyed you can go where you please with impunity." Sherman learned, 26 October, that Hood's army had appeared about Decatur. This clearly indicated an invasion of Tennessee. General Sherman then decided to strengthen General Thomas, leave him to take care of Hood, withdraw his own army to Atlanta and prepare for a march to the sea provided General Grant's consent could finally be obtained. He sent the Fourth and the Twenty-third corps back to Thomas. Thus the discussion with Grant over the question of first destroying Hood continued until 1 November, when, in response to a later telegram on that day from Sherman, which represented that Hood's whole force was only from 37,000 to 40,000, while Thomas would have from 63,000 to 70,000, and that he himself had retained only 50,000 men for his proposed campaign to the coast, General Grant telegraphed, "With the force, however, that you have left with General Thomas, he must be able to take care of Hood and destroy him. I really do not see that you can withdraw from where you are, without giving up all that we have gained in territory. I say then go on as you propose."

Having obtained this permission Sherman pushed his preparations with the greatest energy. The entire population of Atlanta had



already been deported; the various divisions of the army designed for the march were ordered to concentrate at Atlanta, all mills and factories at Rome were burned; the surplus stores, the sick, convalescent, and many thousands whose terms of service were about to expire were rushed to Chattanooga; the garrisons south of that place were withdrawn, and the railroad destroyed. Every command was carefully inspected, and soldiers found in any degree physically unsound were dispatched to Nashville. Care was taken that every man's accoutrements were complete. In the same way the horses, mules and trains were inspected. Wilson's cavalry was dismounted to make Kilpatrick's division perfect, and the remnants sent with Wilson to Nashville.

The march to the sea began on the morning of 15 November. As General Sherman wrote: "It surely was a strange event—two armies marching in opposite directions, each in the full belief that it was achieving a final and conclusive result in a great war;—" Hood's army, which had required the active work of three armies from May until September to push it back to Atlanta, had crossed the Tennessee at Decatur, strengthened by Forrest's cavalry and aiming for Nashville and the Ohio River. The situation at Nashville was thus described by Sherman: "General Thomas was at Nashville, with Wilson's dismounted cavalry and a mass of new troops and quartermaster's employees amply sufficient to defend the place. The Fourth and Twenty-third corps, under Generals Stanley and Schofield, were posted at Pulaski, Tennessee, and the cavalry of Hatch, Croxton and Capron, were about Florence, watching Hood. Smith's (A.J.) two divisions of the Sixteenth corps were still in Missouri, but were reported as ready to embark at Lexington for the Cumberland River and Nashville. Of course, General Thomas saw that on him would likely fall the real blow, and was naturally anxious."

Sherman started with 62,204 officers and men. Of his army he wrote: "The most extraordinary efforts had been made to purge this army of non-combatants and of sick men, for we knew well that there was to be no place of safety save with the army itself; our wagons were loaded with ammunition, provisions and forage, and we could ill afford to haul even sick men in the ambulances, so that all on this exhibit may be assumed to have been able-bodied, experienced soldiers, well armed, well equipped and provided, as far as human foresight could, with all the essentials of life, strength and vigorous action."

The artillery, wagon and ambulance trains were perfect. Each gun, caisson and forge was drawn by eight horses. There were 2,500 wagons with six mules to each, and the ambulances each had two horses. Each soldier carried 40 rounds, and in the ammunition wagons were 200 rounds for men and artillery.

The right wing, Gen. O. O. Howard, was composed of the Fifteenth and Seventeenth corps; the left wing, Gen. H. W. Slocum, of the Fourteenth and the Twentieth.

The war had not produced a more thoroughly organized and equipped army, or one in which more men had passed a thorough physical inspection. As it started for the sea, General

Sherman in his 'Memoirs' thus describes the feelings of the men, and his own: "There was a devil-may-care feeling pervading officers and men, that made me feel the full load of responsibility, for success would be accepted as a matter of course, whereas, should we fail, this 'march' would be adjudged the wild adventure of a crazy fool." This question was to be decided at Nashville, as General Sherman wrote the day after he entered Savannah. "Thomas' complete success is necessary to vindicate my plans for this campaign—" The march to the sea cannot, therefore, be fully understood without considering the Nashville campaign as one of its essential parts. See NASHVILLE, CAMPAIGN AND BATTLE OF

Sherman's army was composed of 55,329 infantry, 5,063 cavalry, and 1,812 artillery. There were two corps, 13 infantry divisions, one cavalry division, 36 brigades of infantry, two of cavalry and 16 batteries. There was no Confederate army between Atlanta and Savannah. Wheeler's cavalry was active on the flanks guarded by Kilpatrick's cavalry, and a considerable force of militia was encountered at Griswoldville.

The order for this historic march clearly presents its organization, its order of daily movement, its methods of living upon the country, the restrictions placed on its dealings with citizens, in short, the whole military machinery of the campaign. It, therefore, deserves a place in every history of the March to the Sea, General Sherman himself holding that no account of that event could be perfect without it. It was as follows:

(Special Field Orders, No 120).

Headquarters Military Division of the Mississippi In the Field, Kingston, Georgia, November 9, 1864

1. For the purpose of military operations, this army is divided into two wings, viz.:

The right wing, Major-General O. O. Howard commanding, composed of the Fifteenth and Seventeenth corps; the left wing, Major-General H. W. Slocum commanding, composed of the Fourteenth and Twentieth corps.

2. The habitual order of march will be, wherever practicable, by four roads, as nearly parallel as possible, and converging at points hereafter to be indicated in orders. The cavalry, Brigadier-General Kilpatrick commanding, will receive special orders from the commander-in-chief.

3. There will be no general train of supplies, but each corps will have its ammunition-train and provision-train, distributed habitually as follows. Behind each regiment should follow one wagon and one ambulance; behind each brigade should follow a due proportion of ammunition-wagons, provision-wagons, and ambulances. In case of danger, each corps commander should change this order of march, by having his advance and rear brigades unencumbered by wheels. The separate columns will start habitually at 7 A. M., and make about fifteen miles per day, unless otherwise fixed in orders.

4. The army will forage liberally on the country during the march. To this end, each brigade commander will organize a good and sufficient foraging party, under the command of one or more discreet officers, who will gather, near the route traveled, corn or forage of any kind, meat of any kind, vegetables, corn-meal, or whatever is needed by the command, aiming at all times to keep in the wagons at least ten days' provisions for his command, and three days' forage. Soldiers must not enter the dwellings of the inhabitants, or commit any trespass, but, during a halt or camp, they may be permitted to gather turnips, potatoes, and other vegetables, and to drive in stock in sight of their camp. To regular foraging-parties must be entrusted the gathering of provisions and forage, at any distance from the road traveled.

5. To corps commanders alone is entrusted the power to destroy mills, houses, cotton-gins, etc.; and for them this general principle is laid down: In districts and neighborhoods where the army is unmolested, no destruction of such property should be permitted; but should guerillas or bushwhackers molest our march, or should the inhabitants burn bridges, obstruct roads, or otherwise manifest local hostility, then army commanders should order and enforce a devastation more or less relentless, according to the measure of such hostility.

6. As for horses, mules, wagons, etc., belonging to the inhabitants, the cavalry and artillery may appropriate freely and without limit, discriminating, however, between the rich, who are usually hostile, and the poor and industrious, usually neutral or friendly. Foraging parties may also take mules or horses, to replace the jaded animals of their trains, or to serve as pack-mules for the regiments or brigades. In all foraging of whatever kind, the parties engaged will refrain from abusive or threatening language, and may, where the officer in command thinks proper, give written certificates of the facts, but no receipts, and they will endeavor to leave with each family a reasonable portion for their maintenance.

7. Negroes who are able-bodied and can be of service to the several columns may be taken along, but each army commander will bear in mind that the question of supplies is a very important one, and that his first duty is to see to those who bear arms.

8. The organization, at once, of a good pioneer battalion for each army corps, composed if possible of negroes, should be attended to. This battalion should follow the advance-guard, repair roads and double them if possible, so that the columns will not be delayed after reaching bad places. Also, army commanders should practise the habit of giving the artillery and wagons the road, marching their troops on one side, and instruct their troops to assist wagons at steep hills or bad crossings of streams.

9. Captain O. M. Poe, chief-engineer, will assign to each wing of the army a pontoon-train, fully equipped and organized, and the commanders thereof will see to their being properly protected at all times.

By order of Major-General W. T. Sherman,  
L. M. Dayton, Aide-de-Camp

Leaving Atlanta in ruins, 15 November, the left wing, which General Sherman accompanied, marched by Decatur, Stone Mountain and Covington. At this point it turned toward Milledgeville, the capital of Georgia, which was the first objective. It was reached on the 22d. Meantime the right wing had marched by Jonesboro, McDonough and Monticello, and was in communication with Sherman at Gordon. Kilpatrick's cavalry, which was operating on the right of the advance, kept in contact with Wheeler's cavalry, and reached the defenses of Macon, thence retiring to Griswoldville, where Walcutt's brigade of Wood's division was halted as a rear-guard. Gen. G. W. Smith attacked Walcutt, but was repulsed (see GRISWOLDVILLE, BATTLE OF). Governor Brown, the State officers and members of the legislature left the capital on Sherman's approach. The arsenal and various public buildings were destroyed.

The march was resumed 24 November, with Millen as the next objective. The two wings followed the general line of the railroad. Millen was reached 3 December. From Millen the army proceeded by the four main roads for Savannah. The effort of the Confederate authorities to organize a force at Augusta to attack Sherman in flank failed, and the march to Savannah was only slightly disturbed by the persistent skirmishing of Wheeler's cavalry. McLaw's division of Hardee's force had advanced to Ogeechee Church, but fell back to the city upon Sherman's approach. The several corps reached the defenses of Savannah 9 and 10 December, and occupied a line from the Ogeechee River on the right to the Savannah River on the left. Hardee occupied the city with something less than 10,000 men. Sherman's effective force numbered a little over 60,000. Hood held the Savannah River below Sherman's lines.

The march had cut a swath of many miles in width through the richest part of Georgia. The heads of the columns and the flanks swarmed with foraging parties, and a country which was daily scoured to supply food for a marching column of 60,000 soldiers was of necessity stripped of provisions, and of everything else that could contribute to the use or

comfort of an army. Railroads had been destroyed for long distances, and all factories and other buildings burned which could contribute to army purposes. There had been no fighting worth mentioning, Griswoldville excepted, and that had only involved one Union brigade.

General Sherman had left Atlanta with 62,204 officers and men of all arms. He reached Savannah with 60,057. On the march 103 were killed, 428 wounded, 278 missing and 1,338 captured. Of those captured, a large proportion were foragers, better known in army vernacular as "bummers."

The night of 12 December a bridge had been completed over the Ogeechee, and the next morning Hazen's division crossed and marched at once to assault Fort McAllister (qv) and open the way to the sea. An hour before sunset the assault was delivered and the fort taken.

This success gave Sherman communication with the fleet which was awaiting him with supplies, and mails for the army.

General Slocum, upon establishing his flank on the Savannah River, had captured two steamboats and sent a force to Hutchinson and Argyle islands just above the city, and sought permission to transfer a corps to the left bank of the river to close Hardee's only line of escape. General Slocum having already sent a brigade under Col. E. A. Carman to the South Carolina shore. General Sherman did not deem this prudent, and as a result Hardee later withdrew his entire force intact and without molestation.

On 17 December General Sherman sent in a flag of truce demanding Hardee's surrender on the ground that he (Sherman) had received guns that could "cast heavy and destructive shot as far as the heart of the city"; that he controlled all avenues by which the city could be supplied with food; that he would grant liberal terms, but if forced to assault he should "feel justified in resorting to the harshest measures," and should make little effort to restrain his army.

General Hardee returned a defiant reply, saying he was not shut in, but had free and constant communication with his department. To the specific call for surrender he replied: "Your demand for the surrender of Savannah and its dependent forts is refused."

General Sherman then proceeded by boat to General Foster's headquarters at Hilton Head to request that a division be sent to occupy the road north of the Savannah River, which line of communication was still open to Hardee. On his return he received the news that during his absence Hardee had put down his bridges and withdrawn with his entire force. The next day General Sherman's forces occupied Savannah.

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H. V. BOYNTON.

**MARCHAND, mâr-shân, Félix Gabriel**, Canadian legislator and author: b Saint John's, province of Quebec, 9 Jan. 1832, d 1900. He was educated at Saint Hyacinth College, was admitted a notary public in 1855, entered practice at Saint John's, and from 1867 sat for the county of Saint John's in the legislative assembly of the province of Quebec. From 8 March 1878 to 19 March 1879 he was provincial secretary, from 19 March to 30 Oct 1879 was commissioner of Crown lands, and from 29 Jan 1887 to 1892 speaker of the assembly. In 1897 he became Premier, with the Treasury portfolio. Subsequent to the invasion at Eccles Hill during the Fenian troubles (1870), he commanded a militia brigade. He did much to improve Canadian journalism, and for many years was proprietor and editor of *Le Franco-Canadien*. He published a 'Manuel et Formulaire du Notariat'; and also the comedies 'Fatenville' and 'Erreur n'est pas Compte' in prose, and 'Un Bonheur en Attire un Autre' and 'Les Faux Brillants' in verse.

**MARCHAND, Jean Baptiste**, French officer: b. Thoisse, Ain, 1863; d. 14 Jan 1934. He entered the army in 1883 and after gaining a commission three years later won fame as an explorer, particularly in Africa. He sought an improved route from the valley of the Niger to the Gulf of Guinea. He became one of the most notable figures in the French public life because of his clash with Lord Kitchener in 1898. Marchand had established the post of Fashoda on the White Nile and had resisted several attacks of the dervishes, when General Kitchener appeared at the head of a British force and requested Marchand to withdraw. The latter refused and soon after departed for France to make his report but the French government receded from its position and the threatened clash between England and France was averted. Marchand was present at the relief of Peking in 1902 and resigned his commission in 1904, when his government refused him permission to enter the Russian army in the war with Japan. He was made Commander of the Legion of Honor, was again in the French army with rank of general in the Great War, was severely wounded in 1915 and was retired in 1919. Consult Murphy, 'Le commandant Marchand et ses compagnons d'armes à travers l'Afrique' (Paris 1900).

**MARCHANT, mâr'chânt, James**, English reformer: b. 18 Dec. 1867. He was educated in private and public schools and for some years was engaged as social writer and worker in East London and the provinces. In 1889-94 he was evidential lecturer to the bishop of Saint Albans; in 1895-97 preacher-in-charge of the Trinity Presbyterian Church, London; and in 1900-02 was civil minister of Saint Andrew's Church, Chatham. From 1903 to 1906 Mr. Marchant was secretary of Dr. Barnardo's Homes and Memorial. In 1905 he traveled on the Continent with Dr. Barnardo's successor investigating conditions of child-life and rescue work. In November 1911 he was dedicated to the work of the National Council of Public Morals in the private chapel of the dean of Westminster Abbey by the bishop of Durham and Rev. F. B. Meyer. His writings include 'Life of Dr. Paton' (1909); joint-author of 'The Memoirs of Dr. Barnardo' (1907); 'Letters

and Reminiscences of Dr. A. Russel Wallace' (1916); 'History of the House of Cassell' (1917); 'The Master Problem' (1917); 'Coffins or Cradles' (1916); 'Birth-Rate and Empire' (1917); 'The Person of Christ'; 'Theories of the Resurrection' (1899); 'Anthology of Jesus' (1926); 'Deeds Done for Christ' (1928). He has also edited numerous publications.

**MARCHES, The, Italy**, a territory now included in the kingdom, but formerly constituting one of the legations of the Papal States. It comprises the region lying between the Apennines and the Adriatic, and is divided into the modern four provinces — Urbino and Pesaro, Ancona, Macerata and Ascoli Piceno. See ITALY.

**MARCHESI, mâr-kâ'sê, Mathilde**, German singer: b. Frankfort-on-Main, 26 March 1826; d. 17 Nov. 1913. Her maiden name was Graumann; she studied under Nicolai in Vienna, and in Paris under Garcia, whose assistant she became. A splendid mezzo-soprano she toured Europe for several years, married, in 1852, the Marchese della Rajata Castrone, a political Italian refugee of 1848, also a singer, who had adopted the *nom de théâtre* of Salvatore Marchesi, and in 1854 became professor at the Vienna Conservatory. She removed to Paris in 1861, where she published her 'École de Chant.' In 1865 she accepted a professorship in Cologne, but resigned in 1868 and returned to Vienna, staying at the Conservatoire 10 years. She settled in Paris again in 1881, and prepared many of the greatest singers of the younger generation, including Melba. Her later years were spent in London, where she conducted a singing academy with her daughter. She was a teacher of rare merit, and author of a method of singing, of two volumes of personal recollections in German (1877; 1888), and of 'Marchesi and Music' (1897). She received decorations and medals from the rulers of Italy, Great Britain, Germany and Austria.

**MARCHIALI, mâr-kê-a'lê, or MARCHI-ALY**. See IRON MASK, MAN WITH THE

**MARCHING THROUGH GEORGIA**, a popular ballad sung during the American Civil War, and commemorating Sherman's March to the Sea. It was written by H. C. Work (qv.) 16 Nov. 1864.

**MARCIL, mâr'sêl', Charles**, Canadian statesman and journalist. b. Sainte Scholastique, Quebec, 1 July 1860. He was educated in the common schools and at Ottawa University. In 1879 he became a member of the staff of the *Montreal Gazette*, and subsequently was successively member of the staffs of the *Herald*, the *Post*, *La Patrie*, and the *Star*, all of Montreal. In 1897 Mr. Marcil was an unsuccessful candidate for the Quebec legislative assembly for Gaspé County. In 1900 he was elected to the Dominion Parliament as Liberal member for Bonaventure; in 1905 he became deputy speaker and in 1909-11 was speaker of the House of Commons. Mr. Marcil became a member of the Privy Council for Canada in 1911. D. 30 Jan. 1937.

**MARCION, mâr'shî-ôn**, founder of a Gnostic sect, called Marcionites: b. Sinope about the beginning of the 2d century, AD; d. about 160. He became a wealthy shipowner, was very liberal, and went to Rome about 140 where he

gave generously to the Church but his views were so unusual that he was not warmly received. He attached himself while there to the Gnostic teacher Cerdo of Antioch, and founded a system antagonistic in many respects to Christianity. Its principal feature was the irreconcilable opposition which it supposed to exist between the Creator and the Christian God, and between the religious systems, the law and the gospel, which it believed they respectively founded. The sect held the existence of three original principles — the supreme and invisible, whom Maicion called the Good; the visible God, the Creator; and the devil, or perhaps matter, the source of evil. Marcion could not perceive in nature, or in the Old Testament, the same love which was in the gospel of Christ. He accordingly made the Creator, the God of the Old Testament, the author of suffering. Jesus was not the Messiah promised by this being, but the son of the unseen God, who took the form but not the substance of man. Marcion denied the resurrection of the body; he condemned marriage, thinking it wrong to increase a race born in subjection to the harsh rule of the Creator. He rejected the whole of the Old Testament, and of the New all except a few epistles and a mutilation of the Gospel of Luke. He led quite a following, which is traced for 500 years, and then disappeared. Consult Tertullian, 'Contra Marcionem'; Harnack, 'History of Dogma'.

**MARCO BOZZARIS.** See **BOZZARIS, MARCOS**

**MARCO POLO.** See **POLO, MARCO**.

**MARCOMANNI**, mār-kō-mān'ni ("men of the marches," "borderers"), ancient German tribe, belonging to the federation of the Suevi. About 10 B.C., under their King Marbod or Maroboduus, they retired from their territory between the Elbe and the Oder before the advance of the Romans, settled in Bohemia, and there built up a powerful state, with which Tiberius made a treaty 6 A.D. Thirteen years later Maroboduus was defeated by Hermann, or Arminius, leader of the Cherusci, who also drove from power Catualda, Marbod's successor. About the middle of the 2d century the Marcomanni, with other Teutonic tribes, attempted to make inroads into Pannonia; they were defeated by Marcus Aurelius in 178; Commodus made peace with them in 180; they furnished Roman troops and were heavily subsidized till the time of Aurelian, when in 270 they were again rebellious and again driven across the Danube. In the 4th century the Marcomanni drop out of history.

**MARCONI**, Guglielmo, Italian inventor and electrical engineer: b. Marzabotto, Bologna, Italy, 25 April 1874; d. Rome, 20 July 1937. He was educated at Leghorn, under Prof. Rosa, and at Bologna University, and so early as 1890 undertook experiments in demonstration of his theory that the electric current readily passes through any substance, and when started in a given direction follows a direct course without the assistance of any sort of conductor. After various experiments in Italy, he finally invented an apparatus for wireless telegraphy, which was successfully tested in both Italy and England by Sir William Henry Preece, engineer and electrician-in-chief of the English postal-telegraph service. Marconi was the first

to perfect the appliances used in space telegraphy or radiography, and the first to patent the application of the electric waves discovered by Heinrich Hertz to the purposes of actual telegraphy as distinguished from mere signaling. This remains true in spite of all the discussion respecting the originality of Marconi's work. It was he who combined the important elements of the wireless telegraph that had previously been invented, and to him the scientific triumph of so-called "wireless" telegraphy is due. He came to the United States in 1899, there continued his experiments, and in 1900 employed his method in reporting the presidential election of that year. He had sent (27 March 1899) messages across the English Channel from the vicinity of Boulogne, France, to the South Foreland, England, 32 miles distant. In December 1901 he began his first experiments in transatlantic telegraphy without wires at Signal Hill, at the entrance to the harbor of Saint John's, N. F. He succeeded with these because of an exceedingly sensitive magnetic detector, that was affected by the very faint etheric vibrations. When his success became apparent through his receiving and plainly distinguishing signals from the Poldhu Station, England, the Anglo-American Cable Company, which holds a monopoly from Newfoundland, compelled him to withdraw, and he selected another station at Table Head, on the east of Glace Bay, Cape Breton Island. On 25-26 Feb. 1902, Marconi, on his way to the United States on board the steamship *Philadelphia*, received signals at a distance of 2,099 miles and worded messages at a distance of 1,551.5 miles. On 21 Dec. 1902 the first official transatlantic telegrams were sent from Table Head. Marconi later (18 Jan. 1903) sent from the South Wellfleet station, Cape Cod, Mass., direct to Poldhu (3,000 miles), a message from President Roosevelt to King Edward. In 1910 the Argentina station received messages of 5,600 miles transit, and since then South American stations have sent and received about 7,000 miles. The Italian government early introduced the Marconi system on its warships, and granted an annual subsidy of \$200,000. The English government also paid a royalty for the use of the system on its ships. On 18 Oct. 1907 the Marconi system between Nova Scotia and Ireland was formally opened for commercial service.

He continued his experiments and inventions, continually improving radiography and the methods employed. In 1906 his new persistent wave system was introduced, and devices developed for giving desired forms to the wave energy sent out. In 1910 his detector was radically improved, and he also brought into use a new receiver. A little later he developed a duplex by which messages could be sent and received at the same time by the same apparatus, without conflict, as is done in regular wire telegraphy. Mr. Marconi received numerous honors, in Italy, England, America and also in Continental Europe. He divided the Nobel prize for physics with Ferdinand Braun in 1909. He was decorated in Britain, Russia and Spain, and received the Grand Cross of the Crown of Italy. The great universities of the world showered degrees on him; Edison accepted official position in one of his companies; he was nominated a senator in the kingdom of Italy, and given the

freedom of war. During the First World War he had charge of Italy's wireless services, at this period developing short-wave transmission as a means of secret communication. After the war he fitted his yacht for experimental purposes, using it as a floating laboratory. The last years of his life were devoted to experiments with short waves and with microwaves, which he believed held the secret of television.

**MARCOU**, mar-koo', Jules, American geologist: b. Salins, France, April 20, 1824; d. Cambridge, Mass., April 17, 1898. In 1848, having been appointed traveling geologist to the Jardin des Plantes, Paris, he went to the United States. He explored the Lake Superior country together with Louis Agassiz (qv), and made wide and important geological studies in Virginia, Pennsylvania and New Jersey. After several trips back to Europe, he settled in Cambridge, where he assisted Agassiz in the Museum of Comparative Zoology. From 1853 to 1855 he was in the employ of the United States government, and from 1875 till shortly before his death he was again in the service. Marcou made a section map of the 35th parallel from the Mississippi to the Pacific, and published *Geological Map of the United States and British Provinces of North America* (1853); *A Catalogue of Geological Maps of America* (1884); *Geology of North America* (1858); *Life, Letters and Works of Louis Agassiz* (1896).

**MARCOUX**, Joseph, Canadian missionary: b. Canada, about 1770; d. 1855. Soon after his ordination as a Roman Catholic priest, his ecclesiastical superiors dispatched him as missionary to the Iroquois. In 1819 he settled among these Indians at Caughnawaga, on the Saint Lawrence, near Montreal. The school and church at Caughnawaga were monuments to the zeal of this modern apostle. Father Marcoux acquired a perfect mastery of the Iroquois tongue, of which he published a grammar and dictionary. Other works by him in Iroquois were *Life of Christ*; *Letters to Iroquois Chiefs* (1848-49); *Prayer Book* (1852); *Catechism* (1854).

**MARCUS**, an island in the Pacific Ocean, north of the Tropic of Cancer, 700 miles northwest of Wake Island and about the same distance due east of the Volcano (Kazan) Islands. The Japanese took possession of it in 1899; subsequently they fortified the island, which had a garrison estimated to number 5,000 men when Japan entered the Second World War. A heavy raid on Marcus by United States naval vessels and carrier-based planes on Sept. 1, 1943, was the first of a series that continued through 1944, when it was attacked seven times from September to the end of the year. American assaults on the island were resumed in January 1945, and continued almost every month.

**MARCUS AURELIUS ANTONINUS**, mār'kūs à-rē'li-ūs, often called simply **MARCUS AURELIUS**, Roman emperor: b. Rome April 29, 121 A.D.; d. Vindobona—the modern Vienna—March 17, 180 A.D. He was descended from an illustrious line which tradition declared extended to the good Numa, the second king of Rome. In the descendant Marcus were certainly to be found, with a great increment of many centuries

of noble life, all the virtues of his illustrious ancestor. Doubtless the cruel persecutions of the infamous emperors who preceded Hadrian account for the fact that the ancestors of Aurelius left the imperial city and found safety in Hispania Baetica, where, in a town called Succubo—not far from the present city of Cordova—the emperor's great-grandfather, Annius Verus, was born. From Spain also came the family of the Emperor Hadrian, who was an intimate friend of Annius Verus. The death of the father of Marcus Aurelius when the lad was of tender years led to his adoption by his grandfather and subsequently by Antoninus Pius. By Antoninus he was subsequently named as joint heir to the imperial dignity with Commodus, the son of Aelius Caesar, who had previously been adopted by Hadrian. Among the many statues of Marcus extant is one representing him at the tender age of eight years offering sacrifice. He was even then a priest of Mars. It was the hand of Marcus alone that threw the crown so carefully and skilfully that it invariably alighted upon the head of the statue of the god. The great Emperor Antoninus Pius lived in the most simple and unostentatious manner, yet even this did not satisfy the exacting, lofty spirit of Marcus. At 12 years of age he began to practice all the austerities of Stoicism and became a veritable ascetic. He ate most sparingly; slept little, and when he did so it was upon a bed of boards. Only the repeated entreaties of his mother induced him to spread a few skins upon his couch. His health was seriously affected for a time; and it was, perhaps, to this extreme privation that his subsequent feebleness was largely due. His tutors, like Nero's, were the most distinguished teachers of the age; but unlike Nero, the lad was in every way worthy of his instructors. His letters to his dearly beloved teacher, Fronto, are still extant, and in a very striking and charming way they illustrate the extreme simplicity of life in the imperial household in the villa of Antoninus Pius at Lorum by the sea. In 140 he was made consul, and he held other offices before becoming emperor. He married Faustina, daughter of Antoninus Pius, about 145.

When his predecessor and adoptive father, Antoninus, felt the approach of death in 161, he gave to the tribune who asked him for the watchword for the night, the reply "Equanimitas," directed that the golden statue of "Fortune" that always stood in the emperor's chamber should be transferred to that of Marcus Aurelius, and then turned his face and passed away as peacefully as if he had fallen asleep. The watchword of the father became the life-word of the son, who pronounced upon that father, in the *Meditations*, one of the noblest eulogies ever written. Among the good works rendered to the empire during the 20 years of his reign were these: the establishment, upon eternal foundation, of the noble fabric of the civil law—the prototype and basis of Justinian's task; the founding of schools for the education of poor children; the endowment of hospitals and homes for orphans of both sexes; the creation of trust companies to receive and distribute legacies and endowments; the just government of provinces; the complete reform of the system of collecting taxes; the abolition of the cruelty of the criminal laws and the mitigation of sentences unnecessarily severe; the regulation of gladiatorial exhibitions:



the diminution of the absolute power possessed by fathers over their children and of masters over their slaves; the admission of women to equal rights to succession to property from their children; the rigid suppression of spies and informers; and the adoption of the principle that merit, as distinguished from rank or political friendship, alone justified promotion in the public service. But the greatest reform was the reform in the imperial dignity itself, as exemplified in the life and character of the emperor. It is this fact which gives to the 'Meditations' their distinctive value. The infinite charm, the tenderness and sweetness of their moral teachings, and their broad humanity, are chiefly noteworthy because the emperor himself practised in his daily life the principles of which he speaks, and because tenderness and sweetness, patience and pity, suffused his daily conduct and permeated his actions. The horrible cruelties of the reigns of Nero and Domitian seemed only awful dreams under the benignant rule of Marcus Aurelius. It is not surprising that the deification of a deceased emperor, usually regarded by Senate and people as a hollow mockery, became a veritable fact upon the death of Marcus Aurelius. He was not regarded in any sense as mortal. All men said he had but returned to his heavenly place among the immortal gods. As his body passed, in the pomp of an imperial funeral, to its last resting-place, the tomb of Hadrian,—the modern Castle of Saint Angelo at Rome,—thousands invoked the divine blessing of Antoninus. His memory was sacredly cherished. His portrait was preserved as an inspiration in innumerable homes. His statue was almost universally given an honored place among the household gods. And all this continued during successive generations of men. Marcus Aurelius has been censured for two acts: the first, the massacre of the Christians which took place during his reign; the second, the selection of his son, Commodus, as his successor. In extenuation of his persecution of the followers of Christianity, it has been alleged in his behalf that he was deceived by evil councillors, who misrepresented the conduct of the Christians to him. This excuse impinges upon his wisdom as a ruler and his admittedly wide knowledge of the conditions of the empire. It is further urged that when we take into consideration the environment of the emperor, no just cause for condemnation of his course remains. He imbibed a bitter prejudice against the new religion from his beloved friend and instructor, Fronto. In the writings of Epictetus, whom he greatly revered, he found severe condemnation of the Christians as fanatics. With such a profound natural bias, it is urged, it is no wonder that he was led to regard the new creed with aversion. But the reason of his course is to be found rather in his deep-rooted attachment to the heathen beliefs of his ancestors and of the empire. It was rather his fear that the ancient cult, bound up as it seemed in the character of Roman rule, was seriously menaced by the progress of Christianity, which actuated him to the severe and bloody measures he took to root out a dangerous rival. He regarded Christianity as a "pernicious sect," a "secret conspiracy" against the empire, an "immoral superstition," whose poison was eating into the social life, and himself as the conservator of the empire and its traditions. Therefore some extenuation might

be conceded to such fierce zeal in persecuting the Christians in almost any other emperor than Marcus Aurelius. But there is a glaring inconsistency in his character in the adoption of so cruel and monstrous a course by one who appears otherwise so admirable. In this signal instance he is as bloody and heartless as a Domitian, a Nero or a Caligula; in all other things merciful, in this pitiless; in his general administration, just and humane; in this, singularly unjust and even vindictive. Whatsoever may be urged in his defense, this relentless persecution of the Christians is a dark blot on his fame. Whatever extenuating circumstances may seem to condone it, his policy in this instance was utterly inconsistent with his general character.

His first edict against the Christians was published in 177. Multitudes perished in the fierce persecutions which followed. Notable amongst the victims were Saint Polycarp in Smyrna and Saint Cecilia at Rome. The manner in which they were tortured before being relieved from sufferings by death was more befitting a savage chief than a civilized ruler.

Of the appointment of Commodus as his successor, it may be said that the paternal heart hoped against hope for filial excellence. Marcus Aurelius believed, as clearly appears from many passages in the 'Meditations,' that men did not do evil willingly, but through ignorance; and that when the exceeding beauty of goodness had been fully disclosed to them, the depravity of evil conduct would appear no less clearly. The emperor who, when the head of his rebellious general was brought to him, grieved because that general had not lived to be forgiven; the ruler who burned unread all treasonable correspondence, would not, nay, could not believe in the existence of such an inhuman monster as Commodus proved himself to be. The appointment of Commodus was a calamity of the most terrific character; but it testifies in trumpet tones to the nobility of the emperor's heart, the sincerity of his own belief in the triumph of right and justice. Compare Farrar, 'Seekers after God' (1868); Renan, 'Marc Aurèle' (1881); Pater, 'Marius the Epicurean'; Arnold, M., 'Essays in Criticism' (First Series, New York 1883); 'Marcus Aurelius Antoninus to Himself' (English tr. by G. H. Randall, London 1910); 'The Communings with Himself of Marcus Aurelius Antoninus, Emperor of Rome, together with his Speeches and Sayings' (tr. C. R. Haines, London 1916); 'The Thoughts of the Emperor Marcus Aurelius Antoninus' (tr. George Long, illustr. W. Russell Flint, London 1909). Consult also Robinson, Ellis, 'Correspondence of Fronto and Marcus Aurelius' (Oxford 1904).

**MARCUS GRÆCUS**, grē'kūs, alchemist, who lived not later than the 11th century, since he is cited by an Arabian physician of that date. In the National Library at Paris are two manuscript copies of a small treatise, entitled 'Liber Ignium ad Comburendos Hostes, Auctore Marco Græco,' one of which appears to belong to the 14th and the other to the 15th century. The work contains an account of an explosive substance the ingredients of which are the same as those used in making gunpowder, though differently proportioned. It may have been that Schwartz, the reputed inventor of gunpowder,



















































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































sciences. He was the originator of the Toltec, Aztec, Kiche, Maya, Zapoteca and Mixteca calendars and systems of hieroglyphic writing, and he is credited with having given names to animals, plants, minerals, places and geographical divisions. He was the great physician and the inventor of medicine; music and poetry, too, were his gifts to humanity. In short, he was a universal culture god whose powers and benefactions were bounded only by the advancement in civilization and the breadth of imagination of each of the many tribes and nations unto whom tradition represents him as ministering.

**Creation Myth.**—The Nahuatl believed that before the creation of the universe there existed a region inhabited by the creator, Tonacatecutli (Ometecutli), and his consort, Tonacacihuatl (Ometecuatl), who had four sons, Tezcatlipoca, Huitzilopochtli, Quetzalcoatl and Yayauqui. When the youngest of these was 600 years old the gods appointed Quetzalcoatl and Huitzilopochtli as their representatives. The two executors created a fire and a demi-sun, and then two human beings, Oxomoco and his wife, Cipactonatl. To the man they gave the art of cultivating the ground and to the woman those of spinning, weaving and prophecy. They then created Mictlán Tecutli and his wife, Mictlán Cihuatl, Lord and Lady of Mictlán. They divided time into days, months and years; and below the shining residence of Tonaca Tecutli, in the 13th region, they created eight heavens, the first of which was inhabited by two stars, male and female; the second by Tetzahua Cihuatl (woman skeletons), whose business is said to have been to devour humanity at the end of the world. In the third heaven were men of all colors; in the fourth birds which descended to the earth. The fifth was the home and birthplace of fiery serpents, comets and falling stars, the sixth the dwelling place of the wind; the seventh that of dust, and the eighth that of the gods. Tlaloc and his consort, Chalchiutlicue, were also created as masters of the waters in the heavens above and upon the earth below. Tlaloc, in turn, created a great number of little servants, all of whom were known as Tlalocs, while he himself bore the title of Tlalocaltecutli, "Lord of the Tlalocs." His pigmy servants distributed the water wherever Tlaloc ordered them to, and sent it down upon the earth in the shape of rain, where it was again taken in charge by other little Tlalocs. Whenever one of these was unfortunate enough to break the jar in which he carried the water the crash of the fall produced thunder, and when a flying fragment hit some mortal, men said he had been struck by lightning.

The sun created by the gods went half way across the heavens and then returned upon its tracks or, according to another version, it rose only a short distance above the horizon and stopped there, and its rays were very feeble, consequently the earth was dimly lighted. Both it and the moon were accustomed to wander about the heavens; so Tezcatlipoca undertook to create a new sun, and there followed an era of sun-creation resulting in the making of four separate luminaries.

**The Deluge.**—There are different accounts of the creation of these suns and even the order in which they were created is disputed;

but that their periods of existence represent four separate ages of the world is agreed by all. When the first sun, Atonatiuh ("water-sun"), was destroyed a great deluge descended upon the earth, when Ehecatonatiuh ("wind-sun"), met with a like fate, an all-devastating wind was created, and when Tletonatiuh ("fire-sun") ceased to exist, everything upon earth was destroyed by an all-consuming fire. Then followed Tlatonatiuh ("earth sun"), who created all things as they now exist. Thus, according to Nahuatl tradition, the human race was swept from the earth three separate times, and people were in constant fear that a fourth destruction was to come, for they believed the four elements, earth, air, fire and water, were in constant conflict, and that for this reason they had already caused previous destructions of the world. After each of these destructions the earth had been repopled by those who escaped. After the first inhabitants of the earth had disappeared, Coxcox and his wife, Teocipactli, escaped in a boat and landed on Mount Colhuacan. They were the progenitors of many children who were all dumb; but one day a bird, from the top of a tree, taught them to speak. They all spoke different languages, however. Hence the diversity of tongues.

**Origin of Mankind.** According to one myth, after the destruction of the earth by fire, by Tezcatlipoca, Camaxtli Huitzilopochtli sat upon a rock and, striking it with his wand, caused the first race—the Chichimeca-Otomi—to come forth and people the earth.

According to an Aztec myth, the first men emerged from a place called Chicomoztoc (Seven-Caves); and this mythological starting-point figures in all accounts of their wanderings. It was probably the place from which the seven tribes set out on their migrations southward, and at the end of which they arrived at the valley of Mexico.

**Mexican Religion.** The Mexican had over 300 deities, some of whom had been borrowed from neighboring tribes and all of whom may properly be classed as nature gods. In addition to these they acknowledged a supreme being, whom they represented as the Lifegiver, Ipalnemoani, "He who gives us life," and Tloquenahuque, the "All embracing." This supreme being was never represented by picture or image and no sacrifices of any kind were offered to him. He was known as "Teotl," the god, and seems to have been identified with the Sun, and at times with Tezcatlipoca. The hieroglyphic by which he is represented is the same as that of the Sun, Tlacatecolotl, "Reasoning Owl," the enemy of the human race, seems to have been, in a sense, the force of evil opposed to Teotl.

The Aztecs and Nahuas in general believed in a life hereafter and that the souls of the dead went to one of three regions, the home of the Sun; Tlalocan, the residence of Tlaloc, the god of waters; and the dreary underworld called Mictlán, ruled over by Mictlantecutli and his consort, Mictlancihuatl. Soldiers killed in battle, prisoners sacrificed by the enemy and women who died in child-birth went to the home of the Sun, the men to wait upon him and to accompany him upon his daily journey to the zenith, where he was met by the women who formed his escort for the rest of the way. Those killed by drowning, lightning or any

of the diseases sent upon earth by Tlaloc or his consort, such as tumors and dropsy, and children sacrificed upon the altars of this god were transported, after death, to Tlalocán, a delightful region of mountains, shady trees and running streams. All those not qualified to go to the home of the Sun or the pleasure regions of Tlaloc were sent to Mictlán, situated, according to some authorities, in the cold and dreary north; according to others, in the gloomy "nave of the earth," where they were forced to lead an aimless existence.

By the Nahuas every phase of nature was personified and had its representative guardian spirit to whom offerings and sacrifices of some kind were made daily or periodically. Among these were household duties, of which every home had several, according to its class, condition and position in society. The sacrifices to the national and tribal gods were attended to by a numerous and opulent priesthood, who ruled in an autocratic manner and exacted heavy contributions for the maintenance of religious institutions and schools, the latter being also under their complete control. These sacrifices, generally slaves or captives taken in war, were offered up upon the stone altars of the temples, the victims being thrown upon their backs and held down by attendants while the officiating priest ripped open the breast and tore out the heart of each and offered it, first to the Sun, and then to the particular divinity to whom the sacrifice had been made. The presentation of fruits, flowers, grain, animals and birds to the family gods was generally made by the head of the family or of the community house, when a number of families lived in one large building, as was often the case in Mexico, while sacrifices were made by individuals to those divinities who were believed to work in the interest of individuals. Tezcatlipoca, a purely tribal divinity of the Texcocans, the most civilized and cultured of the Nahuas people, had continued to gather to himself the powers of most of the other divinities, until, at the time of the Conquest, he was looked upon as a great divine ruler and creator and had become identified with the Toltec supreme divinity, the "Teotl." But he never ceased to be the tribal deity of the Texcocans. Huitzilopochtli, the tribal deity of the Aztecs, had become the great war-god of all the Nahuas because the military successes of the Aztecs had imposed him upon the other nations forming the confederacy. The large bodies of Toltecs who remained in Mexico after the fall of the Toltec empire formed communities, the principal of which was at Cholula, where the presiding deity was Quetzalcoatl, also the foremost divinity of the Zapotecas and, under the name of Yucano, that of the Mixtecas. The Toltecs who went southward carried the worship of this deity into Yucatan and parts of Chiapas, Tabasco and Campeche, where he disputed sovereignty with the older deities of the native races. In the long ages of mythology, hundreds of races surged to and fro across Mexico and the great isthmus of Central America, leaving behind them remnants of their languages, tribal customs and mythologies. Thus we have a mingling of tongues, creeds and customs which has sorely puzzled the antiquarian, the linguist and the student of mythology. The destruction of the native codexes

and the undecipherable character of the remaining records in stone of the Mayas, Kiches and other highly civilized races of southern and eastern Mexico and Guatemala add greatly to the difficulties of understanding mythologies of the various races of Mexico.

Roughly speaking, the Nahua, Maya and Kiche deities may be classed as gods of the air, to whom belong the culture deities, the lightning, the thunder and the storm gods; the sun, the moon and the planet Venus (the Evening Star) and the Supreme Creator; gods of rain, mist, moisture and the running waters of the earth; grain and other plant deities; special patrons of trades, occupations, games, sports, learning of all kinds, including astronomy, astrology, witchcraft, luck in gaming, medicine and the healing art. The functions of many of these seem to be inextricably mingled and confused. This is due partly to our inexact knowledge of the past institutions, history and mythology of the various races who mingled and blended on this great bridge of the continents throughout unknown centuries before history began. But remains enough have been left to show the complicated nature of the religious system of the Nahuas and other cognate races and to prove that they had advanced to a stage wherein ethical considerations played a very considerable part. The prayers addressed to their gods, the speeches to the sovereign and other officials about to take office, the advice of a father to his son and a mother to her daughter; the poetical effusions of the royal poet of Texcoco, Nezahualcoyotl, and many other like documents which have come down to us, are filled with evidence of the high ethical plane of Nahua religious thought at the time of the Conquest; for every occupation of society, all reasoning, every movement of life had their separate being within the shadow of the Nahua religion.

#### MYTHOLOGICAL CHARACTERS.

In the following account of the more important mythological characters most frequently met with in literature relating to Mexico, the territory in which each plays his part is, unless otherwise stated, the land of the Nahuas.

**Bacabs.**—In the mythology of Yucatan the Bacabs, the upholders of the heavens, were supposed to have their stand at the four cardinal points. They were called Muluc, Cauac, Kan and Ix, North, South, East and West. They were probably related to the four wind deities and to the four rain Tlalocs. The Bacabs were frequently represented in Maya sculpture.

**Bat-God.**—The Bat-God, Zotzilaha Chimalman, the "Dweller in the Bat's House"; a primitive divinity of the Mayas, the Zapotecas and the Mixtecas is met with in the Popol-Vuh, under the name of Camazotzo, where he plays a prominent part in the adventures of the hero gods of the underworld. He seems to have been a god of volcanic fire and to have been closely associated with earthquakes and the lower regions.

**Centeotl.**—A family name given to the maize gods. The female divinity, called Chicomcohuatl, "Seven-serpent," represented water as a fertilizer and was assisted by Chalchitlicue, the consort of Tlaloc, in fertilizing

the youngest harvest and looking after it. Under the title of Xilenon, "Green-corn-ear," she was the spirit of the green corn. As the earth goddess, she was called Tonacayolhua, "She-who-nourishes." In this form she was one of the chief deities of the Totonacas, who erected to her, on the summit of a mountain, a great and imposing temple, to which pilgrims came from far and near. The name Centeotl was also given as a special title to both male and female deities. A summer festival lasting 18 days was held when the maize had attained its full growth. Ceremonial dances formed a part of this celebration at which a female called Xalacqua, who represented Chicomecohuatl, danced with the rest. Her face was painted yellow and red to represent the ripe corn. On the last night of the festival all the women and the head men of the community joined in the "dance of death"; after which the Xalacqua was offered up as a sacrifice to Chicomecohuatl. Not till the conclusion of this festival and its significant closing ceremony was it lawful to partake of the new corn.

**Chac** was the rain god of Yucatán. He is represented with a long tapir like snout through which it was believed he blew the rain out over the earth. He corresponds to the Tlaloc of the Mexicans.

**Chalchihuitlicue**, "the rain goddess," wore a dress of nebulous green, a blue crown decorated with green feathers and a collar of precious stones to which was attached a golden pendant, all emblematic of the varying colors of the water. In her left hand she bore a conventional water-plant, and in her right a vase surmounted by a cross, the sign of the four directions or points from which the wind drove the rain.

**Cihuapiltin**, "honored-women," the spirits of women who died in child-birth, were closely related to the Moon Goddess. The moon had two tendencies, one actively beneficent, the other actively malevolent. The Cihuapiltin partook of this latter tendency. They afflicted infants with certain diseases and they entered the bodies of weakly people, more especially the insane who were popularly supposed to be governed constantly by their influence. Their temples were built at the cross-roads which they were said to haunt.

**Citlalotl**, "the Great Star" (Venus), was the Lord of the Dawn, Tlahuizcalpan Tecutli. This astral deity was thought to influence the events of life very greatly, so whenever the planet was due to rise, the people stopped up their chimneys to prevent the entrance of its harm-bearing light; whenever it reappeared on its circuit, captives were sacrificed to its image or its representation painted upon a column called Ilhuicatlán, "Place in the Sky," erected in the courtyard of the great temple of Tenochtitlán. Owing to the very special importance attached to the movements of this planet by both Mexicans and Mayas, its periods of revolution were carefully watched and recorded with great accuracy. As the evening star, this deity was said to follow the sun on his journey to the underworld. He is represented as having a white body, symbolical of light, which was frequently covered with long, narrow, red stripes and over his eyes was a black mask, sometimes bordered with small white circles.

**Coatlicue** (Coatltona), "She with Dress

of Serpents," was the Aztec goddess of flowers and probably identical with the fabled mother of the god of war of the Aztecs. She was the patroness of gardeners who, in the early spring time, offered her parlands of flowers.

**Ehchuah**, the "Black God," was the patron divinity of merchants and cacao planters in Yucatán.

**Gucumatx**, "Green feathered-serpent," the great Maya Kiche culture deity, the equivalent of Quetzalcoatl, of which the name is a literal translation.

**Huechaana**, one of the two Zapoteca creation deities, was the creator of all men and fishes; Cozana was the creator of all beasts. As the story relating to these two creator divinities is also told in another form by the Mixtecas, and as the eagle and the snake play a prominent part in this latter form of the myth, it is probable these two Zapoteca deities were closely related to the culture gods of other Mexican peoples.

**Huehueteotl**, "Oldest of the Gods," the fire deity, was also called Xintecuhtli, "Lord of the Year," while he was venerationally addressed as "tata" or our father. He was represented with a black face and a red body, typical of fire. He wore a headdress of green feathers, a sign of royalty or divinity in pre-Columbian Mexico, and on his back he bore a yellow serpent, symbolical of his own special functions and of his relationship to the god of the air. His connection with the sun, the father of all heat, was shown by a golden mirror. As Xintecuhtli, he was a very much revered household god to whom an offering of drink and bread was made by every Mexican on rising in the morning. It was before his idol that the new fire was kindled every year. It was thought to be necessary for the existence of a new born infant that a fire should be kept burning for four days in honor of its arrival and as a sign of gratitude to the Lord of the Year.

**Huitzilopochtli** (Mexihli), "Humming-bird's Feathers on the Left (leg)," the tribal deity of the Aztecs and their great god of war. He was the son of the Sun God and of Coatlicue (Coatltona), "She with dress of serpent," the Aztec goddess of flowers and the reputed mother of the gods. He was born with a shield in one hand and a blue spear in the other, fully armed for war; and he proceeded at once to the extermination of his sister and his brothers, a fabled tribe of demigods, who had conspired to kill their mother. He pursued them four times around a mountain, killing many. Others were drowned in a near-by lake, while a few surrendered and made peace. Huitzilopochtli usually wore a headdress of humming-bird's feathers; in his left hand he carried a shield and in his right four darts. On account of his prowess in war and of the prominence of the Aztecs at the front of the Mexican confederacy, he was the religious head of the Mexican priesthood. He had power over all growing things; the feather markings of his shield were in the form of a cross composed of dots, thus connecting him with the Tlaloes; his face and his limbs were marked with stripes of blue, and he was seated on a pedestal of blue, at each of the four corners of which was a serpent. Across his face and his forehead, from ear to ear, was an azure band, all typical of his dominion over the sky,

where, as a tribal deity, he ruled as the god of lightning, of thunder and of terrifying winds.

**Huistochiuatl** was the protecting goddess of salt and salt-makers throughout the Aztec Empire, where the gathering of salt from the salt deposits along the low coast-lands was a business of great importance.

**Hurakán**, «He who hurls below,» the Maya-Kiche god of the storm, of wind in motion, was accompanied in his work by violent manifestations of nature by three assistant deities, **Cakulha Hurakán** (Lightning), **Raxa-Cakulha** (Lightning-track) and **Chipi-Cakulha** (Lightning-flash). Hurricane, Spanish *huracán*, is supposed to be derived from the name of this deity.

**Itzamná**, «Dew of clouds and heaven,» father of gods and men, the tutelary divinity of Yucatán, and more especially of the Itzaes, was credited with possessing most of the powers of **Quetzalcoatl**, of ruling over more or less the same phase of human life and of performing more or less the same acts in behalf of humanity, and all evidence tends to show that he was but an earlier peninsular form of the great American culture myth. He was the universal life-giver and hence the patron divinity of birth and of growing vegetation. He was also the culture god who was popularly believed to have taught the Itzaes the civilization they had acquired. He was the fabled founder of Itzamal, and in his capital, in semi-historical times, was a magnificent temple dedicated to his worship.

**Ixtlilton**, «He of the Black Face,» the god of medicine and healing, was also addressed as **Tlateteuin**, the «earth-digger.» He was said to be brother of **Macuilxochitl**. Sick children were carried to his temple to dance, and recite prayers and incantations, after which the priests gave them a special medicine contained in *tlilatl* «black-water jars.» If the patient got better, the image of the god was taken to the house of his residence, where offerings and ceremonial dances were made in his honor.

**Kinich-Ahau**, «Lord of the Sun's Face,» the Sun-god of Yucatán, presided over the North. He was also called **Kinich-kakmo**, «Sun-bird» and **Aháa**, «Fire-bird.» The figure of the Sun is frequently represented upon ancient buildings in Chiapas, Yucatán and Guatemala; and in the latter country certain Indian tribes still wear, on festive occasions, a gala dress with a great, yellow sun depicted on both front and back of the garment. They call themselves «Children of the Sun.»

**Kukulcán**, «Feathered-serpent,» a literal translation of **Quetzalcoatl**, was the great Maya culture god. He is said to have been the first king of Mayapán, just as tradition makes **Quetzalcoatl** one of the kings of Tula.

**Macuilxochitl**, «Five-flower,» **Xochipilli**, «Source-of-flowers,» was the patron of luck in gambling. His worship was general throughout the Aztec Empire and nations to the south of it; and he was held in high honor among the Zapotecas and Mixtecas. At a yearly festival dedicated to him, offerings of cakes, animals and human beings were made and ceremonial dances performed in which the people, richly dressed, took part.

**Metztli**, «the Moon goddess,» **Yohualtecitl**, «Lady of the night,» was patroness of harvest and fertility. The Zapotecas and Nahuas be-

lieved that women stood in a very special relationship to this deity.

**Mixcoatl**, «Cloud-serpent,» the Aztec and Otomi god of the chase, was sometimes represented as a deer or a rabbit. He carried a sheaf of arrows to typify his office. On the site of a famous ancient shrine of **Mixcoatl** stands **Mixcoac**, the «city of gardens,» one of the most popular suburbs of the Mexican capital.

**Nanahuatl**, «Lord of lepers and those afflicted with skin diseases,» is always connected with the moon, and diseased persons under his protection were believed to be sacrifices peculiarly acceptable to her, for whose service they were set apart. The moon goddess was intimately connected with the art of healing and she also took a special interest in lepers.

**Napatecutli**, «Four-times-lord,» protector of mat-makers, one of the numerous rain gods, was one of the ministers of **Tlaloc**. He presided over the low, swampy lands where the reeds grow from which mats are still extensively made in Mexico.

**Omactli**, «Two-reeds,» Nahua god of festivities and rejoicing, whose image always presided over the feasts of the well-to-do, was ceremonially eaten in the form of a great bone of Indian corn meal at every festival. The idol had a recess in the region of the stomach into which provisions were put. The image wore a paper coronet and a cloak fringed with flowers and carried a sword.

**Opochtli**, «Left-handed,» Aztec god of fishing, also called, in Chalco, **Amimitl**, was said to be the inventor of the fish-hook, line and spear and other means of catching fish. The similarity of his name with that of the Aztec god of war would seem to connect him with the latter, especially when it is remembered that **Huitzilopochtli** was the tribal god of the Aztecs when they were mainly fishers.

**Sun-god**, the supreme deity of the Toltecs, played an important part in the mythologies of the Nahuas, Itzaes, Mayas, Zapotecas, Mixtecas and other races of Mexico and Central America. He was called **Ipalmemohuani**, «He-by-whom-we-live.» As the god of warriors the priest and nobles claimed descent from him. His golden image was hung upon the wall of his court where the first rays of the rising sun fell directly upon it. Human sacrifices were offered to the Sun, whose strength was sustained by the blood of these victims, otherwise he would not be able to continue his journey through the sky. Even the hearts of the captives offered to **Huitzilopochtli** and **Tezcatlipoca** were first presented to the sun. Some of the most magnificent temples of Mexico, Central America and Peru were erected to the Sun-god.

**Tepeyollotl**, «Heart-of-the-hills,» personification of the echo of the mountains, was one of the nine attendants of the night and lord of the 13 days following the flood, in which no sacrifices were good, and during which the feast of the jaguar was held. He was a southern deity highly honored among the Zapotecas and the Mixtecas and bordering tribes.

**Tezcatlipoca**, «Fiery-mirror,» the tribal deity of the Colhuas, was a god of the winds and the tempest and the giver of breath and hence of life. In the Nahua legend he is, the

opponent of Quetzalcoatl whom he deceived and induced to give up his work upon earth and return to the home of the Sun. In the capacity of doomster he was called Yaotzin, "The enemy," and Nezahualpilli, "Hungry-chief." As the spirit of the ever-youthful tempest, he was addressed as Telpochtli, "Youthful-warrior", and as the spirit of the night, he was called Yoalli Ehecatl, "Night-wind." Benches were placed along the highway for him to rest on after his exertions of the night. He was a god of fortune and of fate. As the deity to whom worship was obligatory, he was known as Monenque, "Claimer-of-prayer" and as such he had special power over plague, famine and threatened danger to the people, the state and the human race. He had dominion over life and death. He carried a whistle, symbolical of the noise of the wind, as a warrior god he was armed with dart and shield. To his legs were fastened small bells and in his left hand he held a golden mirror, in which he saw reflected all that passed upon earth.

**Tlaelquani**, the Mexican deity whose province it was to forgive or eradicate sin possessed a dual nature. She was the patroness of desire and luxury, and the confessions made to her were restricted to sins against morality. She was mediator between the penitent and Texcatlipoca, the "Most Powerful God," the "Protector of All" and the "Searcher-out-of-evil." The penitent, in the presence of the officiating priest, lighted a sacrificial fire and burned incense to the deity to whom he confessed his sins and addressed his prayers for forgiveness.

**Tlalocs.**—The Tlalocs were masters of the liquid element in all its forms. In the dwelling place of the Tlalocatecutli and Chalchuihtlicue, Lord and Mistress of the Tlalocs, there were four ponds of water, the first of which aided germination, the second of which withered the seed, the third of which froze it and the fourth of which ripened it. These two deities were, according to the myth, created after the appearance of the last sun. Tlalocatecutli was called the "Fertilizer of the earth," and the "Protector of Temporal Gods." He and his consort lived on a high mountain among the eternal clouds, and from there he sent his visitations of water, mist and fog. Hence his images were erected on high elevations such as hill tops and mountain summits. The characteristic sign of Tlaloc was the cross, which represented the four points of the heavens from which the winds drove the rains. The representation of Tlaloc in the Mexican manuscripts, is painted green and azure to depict the different shades of water; and he carries a spiral-shaped wand of gold, typical of the lightning.

**Tlapotlazenán**, the Aztec goddess of healing and the discoverer of turpentine as the base of certain native ointments, popular at the time of the Conquest, is credited with having originated most of the medicines in use throughout the Aztec Empire.

**Uayayab**, "He by whom the Year is Poisoned," was the Maya deity who presided over the five unlucky days at the end of the year. His image was carried out of every village and town and left outside during the days of his influence in order that he might not poison the new year.

**Votán**, the fabled civilizer of the ancient

people of Chiapas, was closely related to the culture gods of the other races of Mexico and Central America.

**Xipe** was the god of vegetation and the sowing time and his general characteristics are those of the culture deities. He was considered a tribal equivalent of Tezcatlipoca and, under somewhat varying forms, he was worshipped throughout the Aztec Empire and among the nations bordering upon it to the south. He was connected with the Moon, and the gold and silversmiths regarded him as their tutelary god. He was called the "flayed one," because at his festival the skin was removed from each human victim sacrificed to him and worn for 20 days by the devotee furnishing the sacrifice. In Tenochtitlan, where his festival was one of the important religious events of the year, he appears to have been looked upon as the god of human sacrifices. The monarchs and chief warriors of the Aztec Empire, when actively engaged in war, frequently donned the classical costume of Xipe.

**Xolotl** was a southern deity of lightning; and in the Aztec calendar he ruled over the 15th week and the 17th day sign, but as the Mexican calendar was borrowed from southern nations, and as the nature of this exotic deity was not understood by the Aztecs, he always remained to them a strange, mysterious figure. He was the Lightning Beast of the Mayas and cognate tribes, among whom he was a deity of the air and the cardinal points or the four directions of the winds.

**Xpiyacoc** and **Xmucane**, Father-and-Mother gods, are the Maya Kiche equivalent of the Nahuatl generators, Omecēcutli and Omēcēhuatl. They were endowed with creative power.

**Yacatecutli**, "He who guides," was the Mexican god of commerce and trade, and the Aztec merchants held in his honor, twice a year, great festivities during which elaborate banquets were held and sacrifices were offered to the god. The traveler's staff was his particular symbol, and to it prayers were made and offerings of flowers and incense proffered.

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**13. ART. Pre-Columbian Art.**—When Cortes first visited the shores of Mexico in 1519, he was surprised at the skill displayed by the Indian artists, who rapidly drew excellent sketches of his ships, his men, with their clothing, their arms and their horses, and forwarded them, by rapid courier service, to Montezuma in Tenochtitlán. This was the first contact of European and Mexican civilizations which was destined, in the near future, to produce the greatest and most characteristic of all the colonial art in the lands under the domination of Spain, during the 16th, 17th and 18th centuries, an art which is neither native American nor Spanish, but a mingling and blending of both in a way that has made it truly Mexican.

Mexican Indian art before the Spanish Conquest was mechanical, industrial, commercial and graphic. It was pictorial in the sense that all hieroglyphs and pictographs are pictorial, but it had not advanced beyond that stage in which it was still almost altogether a useful art. Mexican paintings, drawings and sculpture were the handmaidens of religion, commerce, trade, history, geography, literature and science, and so intimately were they all connected with one another that it is impossible to understand one without comprehending the others. Yet all had their influence upon the new art that sprang from the meeting of the two currents of thought, from the Old World and from the New.

The pre-Columbian inhabitants of Mexico were artistic in varying degrees, and the artistic sense still shows itself strongly in their descendants. Poets, orators, decorators, musicians, literary men, artists, penmen, all bring to their work a depth of feeling, a strong sensitiveness, often a strange vagueness, indicative of the artistic mind. The untutored, uncultured Mexican peasant produces pottery, artistic in form and decorated in pleasing colors and designs. He readily imitates the furniture imported from the best art centres of Europe and the United States; in many parts of the republic his weaving, his designs on woolen wraps and blankets and his pictorial feather-work are the delight of art collectors. This art sense creeps out in the most unexpected places. The rude Indian from the hills surprises us with the artistic way in which he has arranged the flowers he offers us for a few cents; he delights us with the baskets of his own manufacture on which he has depicted, in a really graphic manner, scenes from the national customs; with figures modeled in clay and painted in natural colors, depicting, in a most vivid manner, local types, customs, dress, trades, occupations, sports and pastimes. Generally the humble, diffident, barefooted, brown-faced figure, dressed in wide-cut, cotton pantaloons and shirt of the same material, who

offers his wares for sale, is their creator; for there is little retail business among the Indian population of Mexico outside the towns and villages. All this points to an artistic past; for the condition of a given race at a given time is the result of its ethnic development.

**Indian Feather-work.**—The most characteristic of the pre-Columbian Mexican arts was the native feather-work, which called forth the admiration of the art lovers of Europe. The Mexican artists produced wonderful pictures by matching, with infinite patience and consummate skill, small particles of feathers, which they gummed to a background of woven fabric. An enthusiastic witness, bearing testimony shortly after the Conquest, says: "They (the Aztecs) painted in feathers, producing the living colors of nature"; and one can well believe this statement; for the untutored, ignorant Mexican Indian still handing down the traditions of his fathers imitates in feather mosaics national scenes, customs, occupations and sports, in so realistic a manner that, at a short distance, his work seems painted.

These feather artists were in all their glory at the time of the Conquest and they continued to flourish in Mexico for almost a century afterward. Their art was known to all the Nahuatl peoples; and centuries before the Norman Conquest of England, the Toltecs had developed it to such an extent that immense pieces of feather draperies representing mythological and other scenes were used as hangings with which to cover up completely the walls of certain apartments of the great temple at their capital, Tula, dedicated to Quetzalcoatl, god of the winds. Three different sections of the temple were decorated in this way, in each of which a distinctly different color effect had been produced. Feather tapestries were used as hangings for the palaces of the Aztec emperors and nobles; and they were, competent witnesses assert, the equal of the best woven or painted wall hangings made in Europe during the 16th century. With the boldness born of long practice and acquired skill, Mexican feather artists attempted successfully to produce in feathers the works of the most famous Italian and Spanish artists of the 16th century. The converted Indians "painted" in feather mosaics the favorite saints of the Catholic Church; and their work, which was encouraged by the papal authorities at Rome, became immensely popular in Europe.

The most brilliant plumage of the birds of the tropics were sought out with which to imitate the colors of nature. Shortly after the Conquest a Great Christian-Pagan feather mosaic was sent to Pope Paul III; and so excellent was its workmanship that his Holiness would not believe it had not been painted in oil until he had tested it by examining it closely and carefully. This work so impressed him that he expedited a bull, in 1537, rehabilitating the Indian races of Mexico, the greater part of whom had already been reduced to slavery in the 16 years that had elapsed since the Conquest.

Feather-work mosaics and other forms of ornamentation and decorative feather art entered into the very life of the Mexican people prior to the Conquest. All the land of the Aztecs was searched for artists who showed



special talent in this difficult and exacting kind of work. Children were trained from childhood in special schools of art and their masters were themselves the most skilled artists of the land. Picture-making was, however, but a part of their instruction. They were schooled in the art of making princely garments for the emperor, the princes, the nobles and the priests and the noble ladies of the court, so highly was the art esteemed that the sovereigns themselves considered it high honor to be classed as even passably good feather artists. Clazoni, king of Michoacán, next to Texcoco, the greatest centre of feather-work, enjoyed the distinction of being the best artist in his kingdom, and he was mordantly proud of his skill, probably more so than of his royal honors.

**The Feather Market.**—The work of the feather artists developed a great commercial business for the Aztec merchants. The most highly appreciated feathers were bought and sold daily in the market, where they were so esteemed that they brought literally several times their weight in gold. They passed as currency among the Aztecs and neighboring nations, and nothing more valuable with which to pay the ransom of captured princes or conquered kingdoms existed than they. Captives who were good feather artists brought high prices in the market and, for this reason, their lives were spared from the sacrificial altar. Merchants devoted themselves especially to the buying and selling of art feathers; and the chief purchaser for the court held the title of purveyor of feathers to the sovereign. Men of fine artistic tastes were trained to sort feathers and to arrange them into classes according to their color, fineness, merit and market value. They held office under the government and were highly paid officials.

Throughout the Aztec Empire, very stringent laws protected the birds from which the most esteemed feathers were obtained for the work of the artist; and the quetzal, the most highly valued of these favored ones, grew into a sacred bird, and as such his feathers could be worn only by the king and the high priest, both of whom represented their gods upon earth. The Aztec monarchs maintained great aviaries in the capital where birds of rare plumage were reared with the greatest care; and the stealing of feathers from these royal aviaries was punished with death.

Centuries of training in art work of such an exacting nature as feather mosaics developed the artistic sense strongly in the artist caste of the Mexican people; and it is not at all strange that this ability began to show itself in a new way shortly after the Conquest, when Spanish friars and missionaries, many of them no mean artists themselves, began to teach the principles of European art to the pupils of the Mexican convents and schools, nearly all of whom belonged to the native nobility or to families dedicated to trade, to the arts, the crafts or to literature and music, all of which were held just a little lower than noble rank. The merchants who brought the precious feathers to the capital and distributed the manufactured product to the furthestmost confines of the empire and to the countries beyond formed a guild unto themselves, over which presided Quetzalcoatl, the first half of whose

name is formed from the "quetzal," the sacred bird and the symbol of divinity. It is still preserved upon the coat of arms of Guatemala. But the very enthusiasm with which the natives threw themselves into the new learning called for the restraining hand of Spain, which gradually shut out from them almost every field of endeavor except that of painting, or so controlled the workmen that the Spaniards got the profits and the glory from every accomplishment.

**Hispano-Indian School.** Echoes have come down of a school of Indian painters, who flourished during the first 50 years following the fall of Tenochtitlán, in Texcoco and Cuautitlán, both towns near the capital. Under their Spanish masters they had learned to paint the saints and to represent graphically biblical and religious legendary subjects. They painted the pieces of "escenariio" necessary for the production of the miracle plays and other dramatic representations by means of which the Christian Church attempted to teach the natives the principles and dogmas of its faith. Little or none of the art of this period has survived, with the exception of one picture of international fame which, on account of the material on which it is painted and the artist's treatment of his subject, almost certainly belongs to this early Ibero-Indian school. This is the famous picture of Our Lady of Guadalupe, which made its appearance within eight years after the fall of the City of Mexico, or before 1530. The religious legend asserts that the picture of the patroness of the Mexican people was miraculously made by the tilma or shroud-covering of a poor Indian named Juan Diego; historical investigation has shown that it was painted for a miracle play given in one of the new convent schools in the City of Mexico very shortly after the Conquest. This picture shows very considerable artistic talent, which is neither Spanish nor Indian, but a blending of the two. The drawing is bold and free and the coloring anticipates, by three quarters of a century, the soft, pleasing tone of the artists of the first great Mexican school.

The demands of the ever tireless, ever active church upon the Spanish born and native artists alike were insistent and persistent and many hundreds of canvases belonging to the first three quarters of a century following the Conquest were produced at the wave of her miraculous wand, for the churches, schools, convents, monasteries and episcopal palaces, that sprang up, phantom like, throughout the land. Spanish artists of note were brought from old Spain to superintend the work of the native artists in New Spain; and they all attested the wonderful aptitude of their pupils.

**Early Spanish Masters.** One of the earliest of these masters was Rodrigo de Cifuentes, who arrived in Mexico shortly after the Conquest. He appears to have had the patronage of the conqueror, Cortes, of whom he painted several portraits. The picture of the baptism of Magiscatzin in the church of San Francisco, Tlaxcala, is said to be his work. He also painted the portraits of the first audiencia and also of Doña Marina, the Indian querida of Cortes, about 1536.

Andrés de Concha, who arrived in Mexico during the time of the first viceroy, and his



Indian pupils enjoyed a high reputation as interior decorators of churches and convents and they were often called to interior cities to do decorative work. The group of paintings over the high altar of Santo Domingo Church in Yauhuitlán, Oaxaca, is the work of Concha, whom Padre Burgoaque calls the Apeles of the New World.

Arteaga, another master painter, is said to have reached Mexico City three years after the Conquest and to have been very active in building up the Indian school. There was one of his pictures, 'The Visitation of the Virgin,' in the old church of Santa Teresa about the middle of the 18th century; and it is probably still in existence.

Simón Pereyus, a Flemish artist, painted the pictures for the main altar of La Merced church, and a 'Virgin with a Child' in the National Academy is supposed to be his work. Francisco Zumaya and Francisco Morales were his contemporaries. Alonzo Vázquez, who was somewhat younger than Pereyus, was also active as an artist and a teacher. The 'Assumption' and the 'Redemption,' in the National Academy are credited to him. Juan de Rúa, one of Vázquez' pupils, has left a fairly good series of scenes from the life of the Virgin, in the church of San Francisco, Cuautinchán, Puebla.

Pupils of these masters, also famous in their day, have come down to us. Bernal Díaz del Castillo, the first historian of the Conquest and one of the soldiers who took part in it, praises highly three Indian painters and lapidaries, Andrés de Aquino, Juan de la Cruz and El Crespillo whom he likens to the best artists of Italy and Spain in his day. Alonzo Vázquez and his pupil Juan de Rúa, already mentioned, are credited with having introduced correct European methods of art into Mexico; and they and their school undoubtedly paved the way for the flourishing and excellent school of artists of the 17th century. In fact we know, by the results already obtained and by the reports that have come down to us, that there had been a wonderful quickening of life in all the arts between 1521 and 1600. This was but a re-echo of the animation in art in Spain herself, in Italy, in the Netherlands and throughout the vast Spanish empire in America. Industries, arts, trades, commerce, mining, agriculture took on a new existence, and Mexico City became the first metropolis of the New World, and the centre of this new-born progress in America. The genius of the Spaniard for organization laid its hand upon the immense domains of the Moctezumas and that hand was never lifted for 300 years, during all of which time the artistic life of the luxurious capital of New Spain was ever in touch with that of the mother country. With the coming of the first viceroy in 1535, this activity of the favorite colony increased. A year later printing was introduced into Mexico City; and the court of Spain began to take a peculiar interest in the educational and artistic development of her favorite colony. To this interest and the strong encouragement which accompanied it is due, in part at least, the eagerness with which the native artists worked. The hundreds of Spanish and Flemish paintings and the thousands of art prints that flooded the land, affording means of study and advancement not before possessed by the natives, made

possible the successful school of native art with which the 17th century opened.

**Influence of Spanish Art.**—The discovery of America and the sudden vast treasures that poured into Spain from over seas, the long struggle with the Moors, of Christianity against Mohammedanism, the rise of the Catholic Church and the birth of the temporal power of the popes and the consequent wars necessary for the maintenance of the powers and conditions thereby engendered, were forces that worked inexorably to the shaping of all Spanish art, which had its origin in the Church and received its inspiration and encouragement constantly from the same source. Italy was the great mistress of Latin art and the teacher of Spain, when she came to lay by her Gothic traditions, but Spanish art traveled a road distinctly different from that of Italy. In Spain art was very largely influenced by the traditions and dogma of the Christian Church, which continued to shape it to its ends and control its execution. In Italy it was classical and it ran after strange gods which also shaped it to their ends. In Italy art was free, unrestrained, licentious the more orthodox Christians contended. In Spain it was bound by the canons of Church law, by the restrictions of ecclesiastical councils and by an intense fanaticism and a devotion to the Christian doctrine and legendary lore unknown in other countries. Upon it rested the heavy hand of asceticism and the sombre shadow of the Inquisition, a peculiarly Spanish institution. Yet the artists of Italy exercised an all-powerful influence upon those of Spain, for more than two centuries of changes varying always within a certain defined and restricted area of activity. The ascetic Spanish taste did not change its Gothic attitude, when under Italian influence it changed its fashion in painting. While the Italian gloried in the nude of Greek and Roman art, the asceticism of Spain covered up the parts of the human body, wrapping them about with draperies, too often much less artistic than the freer treatment of Italy. While the Italian artist boldly attempted to depict the human anatomy in all its nude or semi-nude and almost wholly Pagan attitudes, the Spanish artist was forced to resort to suggestion to convey lasting impressions of what his asceticism had forced him to hide from sight. Thus, while the Italian artist, by his free and unconventional use of the nude, obtained brilliant sculptural effects, the Spanish artist, in his efforts to reach the same ends, while draping his figures, became insensibly a colorist. So Murillo, the greatest of all Spanish colorists, has always been Spain's most popular artist.

It was therefore natural that, of all the Italian schools, the Venetian suited Spanish taste best; and of all the Venetian artists, Titian appealed most to the Spanish attitude of mind toward art. The brilliant coloring of the Venetians, their indistinct drawing and their neglect of the antique appealed to the religious ideas of the Spanish artists. So Titian became the motive spirit in the renaissance movement in Spanish art. A powerful but secondary influence was exercised by the Hollander, Antoine More, who, as a portrait painter, was little inferior to Titian. Vandyck also contributed to the making of Spanish art traditions. But the atmosphere of Spanish life

and the fervid religious spirit of the land twisted all the foreign traditions of art and of schools to their own way of thinking and of viewing life and of acknowledging its obligations, with the result that Spanish art grew to be a thing apart from its own Gothic traditions, from the classical style which it imported from Italy and the rigid Venetian school to which it very strongly inclined. The sombre, ardent, fanatical Spanish mind worked over all these materials and from the working sprang a new art which was peculiarly Spain's. For more than two centuries this strange semi-artistic, semi-ascetic spirit brooded over Spain, producing the magnificent creations of Vargas, Morales, Sanchez, Coello, Joannés, Becerra (the great teacher), Fernández el Mudo (the "Titan of Spain"), Cotán, Zubarán, Pereda, Velázquez (the incomparable portrait painter) and Murillo, the superb master of color. And they all had, through their art which found its way across the Atlantic, their influence upon the artists of the colonies in America. Yet we look in vain in treatises on art for any adequate presentation of the work of the American artists or of the vast output of excellent painting by the Spanish colonies in America, all of whom followed the traditions of the mother country, modifying them more or less according to their several environments and local influences. Yet for more than two centuries, the followers of the Spanish masters in America, enthusiastic students of their creations, tireless workers, covered the two continents from San Francisco to Buenos Aires, from Cuba to Chile. In every provincial capital industrious schools of art existed; and all followed the traditions of Spain. At the exhortation of the Church and the insatiable demands of the dealers who made a business of shipping pictures over seas to the colonies, the Spanish artists at home redoubled their efforts, and a constant stream of canvases poured forth from their lives of art industry. No church, convent, college or university in the vast domains of Spain beyond the sea was so poor as not to possess at least one treasure from the art centres of the mother land. When the ecclesiastic dignitaries of Spain wished to show honor to some institution of the colonies, they forwarded to it a painting or other work of some noted Spanish artist. The king, the emperor and the nobles showed their favors in the same manner. New Spain, the favorite namesake of the mother land, became thus a storehouse of Spanish art. These treasures were to the Mexican artists what the pictures of Italy and Holland were to the artists of Spain. They copied them, they imitated them and they built upon them a Mexican art which, while it followed the traditions of the Spanish school, was yet, in many respects, distinctly Mexican, as the character of the Mexican people and their environments are distinct from those of Spain.

For more than 200 years the Spanish artist attended to only one of the manifestations of nature, that is, man and his relation to the deity and to heavenly manifestations. Mountains, streams, oceans, the sun, the moon, the beauty of the night and the glory of the day meant nothing to him except when they helped him to depict his deity, his saints, his religious traditions, his dogmas and his miracles. In all this the Mexican artist followed

his masters, faithfully, conscientiously, earnestly. But the spirit with which he executed his tasks was noticeably different from that of his teachers. The stern, harsh character of the Spaniard is depicted in the hard lines of even the best of his artists up to the time he began to leave behind him the vivid memory of his terrific religious wars against the Moors. When the "heathen" of the New World had been conquered and placed beneath his heel and he had filled with churches, shrines and colleges their vast domain, when he had lifted from his shoulders the burden of strife in behalf of altar and hearth, then the Spanish artist began to cover up the harsh lines of Gothic and early Venetian art traditions and feelings, thus engendering an attitude of mind that made possible the wonderful analytical representations of Velázquez and the brilliant coloring and softening effects of Murillo.

But as the Indian character was different from that of the Spaniard, so long before Spain had deserted her ancient Gothic traditions completely, the Mexican artists had become noted for "the gentleness of their art." More than half a century before Murillo produced his best work, which marks the middle and last periods in his progressive development, the old Mexican master, Baltasar de Lechave, had painted characteristically native pictures which found their way to the foremost shrines of the country and to many of the Spanish colonies in America where, not infrequently, they were represented to be the work of noted Spanish artists. His reputation extended even to Spain where he was praised by the foremost painters of the day, a great distinction for a colonial artist, in an age when Spain was very jealous of all honors given outside her own peninsular domain. But greater honors have come to Mexican artists since Lechave's day; for the works of her masters have been gathered up from all over the land and taken to Europe where they have been passed off as original works of Spanish masters of the 16th, 17th and 18th centuries. Thus Mexico has lost countless treasures of native art. Every revolution has helped to deplete her works of her greatest artists. The sacking of cities, the plundering of churches, convents and private houses, the rapacity of native owners of art treasures and foreign speculators, and often the very ignorance of the revolutionary leaders have conspired to deprive her of the living records of her prominence in art over all the other nations of the American continent. Some of the revolutionary leaders have been accused of cutting from their gilded frames the great old canvases of the churches and convents and turning them with the paint side upward to serve as tents or shelters from the tropical sun for themselves and their brother officers. Valuable pictures of native and foreign artists were not infrequently slashed with swords or knives or otherwise mutilated or destroyed. But the greatest injury done to native art was the result of the ignorance of the treasures possessed by the nation and the consequent neglect to care for it. Ancient pictures of merit were replaced by others of lesser value or historical interest by some local artist in vogue at the time and the dispossessed pictures were relegated to the garret where they were left to moulder in the damp and darkness and

to become worm-eaten Guardians of the treasures of the church, tempted by cupidity, often sold their finest pictures, which not infrequently passed to foreign lands there to cease to be Mexican in name at least.

And yet no other country on the American continent continues to possess anything like the amount of really artistic pictures of its ancient artists as that still retained by Mexico. Lovers of art in Mexico have begun to recognize the high standard of excellence attained by their best masters of the 17th and 18th centuries; and the market value of these pictures has risen rapidly during the present century. But this is an added danger to the retention of the native art at home.

**The School of Echave.**—The founder of the first Mexican school was Beltásar de Echave, the elder, whose first existing picture dates back to 1601. He had already become a famous artist by 1609, years before Velázquez and Murillo flourished in Spain. His drawing and conceptions are very much better than anything produced by his contemporaries; his forms and faces are true to nature and his style is devoid of affectations and conceits. Other Mexican painters have surpassed Echave in execution, in perfection of style, in the observation of the technical laws of art, but none have approached him in fertility of invention and depth of thought. In fact he was philologist, critic and writer as well as artist. His wife, La Sumaya, who was also an artist of no mean merit, is said to have been his teacher in the art of painting; and a meritorious picture of San Sebastian in the cathedral is said to be from her brush. Echave and his wife both belonged to the Spanish school of Joannés, the best artist of his day and superior to all who preceded him in Spain. The work of Echave is unequal, but the best of it shows a genius superior even to that of his master, whose praise all Spain sang in his day. Though his style was finished and somewhat labored, like that of the artists of his epoch, yet his industry and application were so great that he left very many pictures varying from huge canvases to small tablets, which, before the amortization of church property, were to be found in many of the churches of the capital and in many of those in the interior. Among his existing pictures are 'San Cristobal' (1601), which stood over the great door of the Franciscan monastery, 'San Ignacio' (1610), and the 'Martyrdom of the Virgin of Colonia,' both of which were also in the same edifice; 'San Francisco de Paula,' in Guadalupe church; 'Martyrdom of Santa Catarina' (1640), in Santo Domingo, and 'Santa Cecilia,' one of his best, in the Profesa. In 1608 he painted 15 tablets for the altar of the old church of Santiago, Tlaltelolco.

Luis Juárez, a contemporary of Echave, shows, in all his works, strong individuality. His figures are excellent, his exposition strong and true, but his execution is frequently unequal. Many of the heads of his figures, to which he paid much attention, are as fine as anything produced by the Spanish masters of his day. Juárez' style is free and less labored than that of his master, Echave, to whom he is but slightly inferior. He was very prolific and this, coupled with his popularity, made his execution, like that of Echave, very unequal.

However, his conception is always bold and his coloring good. His work is more realistic than that of Echave. Most of his known pictures are in the Mexican National Academy.

José Juárez, who was active from 1642 to 1698, followed the traditions of Echave and came the nearest of all the Mexican painters to attaining to the excellencies of his master, to whom he was but slightly inferior in expression and the depicting of religious feeling. He had exceptional talent but, owing to the speed with which he was forced to do the vast amount of work that came to him, he often became careless. Rafael Lucio, an excellent critic, says of Juárez "I have seen angels of his that seemed to belong to the very best period of Italian art." His style is elevated and even more realistic than that of Luis Juárez; his drawing and execution are good, and in his grave and harmonious coloring there is a noble severity. His figures are free and flexible and show strong individuality, while his canvases are generally lit with the animation of life, partially due to his masterly grouping of figures, his excellent coloring and his decided tendency toward that softness and simplicity which distinguishes the school of Echave. There is a noted depth and contrast in his coloring. A number of his best pictures are in the Mexican National Academy.

Sebastian de Arteaga, a priest and notary for the Inquisition, was another excellent artist belonging to the school of Echave. He displays vigor, power, freedom of movement and a boldness unknown up to his time in the Mexican school. His style is less finished than that of his great contemporaries and his coloring is not so good; but his figures of the Virgin are graceful and beautiful. He is content, too often with carefully executing his central figures and leaving his accessories but poorly done. His style is truer to nature than that of the elder Echave but he lacks the grace of the old master and that simplicity which distinguishes the early Mexican painters. In his work there is a dash and a freedom with the brush that might have made of him a really great artist had he given his whole attention to art; but he had too many other occupations to permit him to work out his own salvation. In the Mexican National Academy there are three notable pictures of his: 'The Betrothal of the Virgin,' 'Saint Thomas Putting his Hand into the Wound of the Christ' and his 'Adoration of the Wise Men.'

Beltásar de Echave (1632-82) the younger, son of the elder artist of the same name, developed a style very different from that of his father. He was bold and vigorous but too impatient to finish his work well. His drawing is frequently faulty and his execution reminds one of Arteaga, of whom he was a contemporary. His compositions, however, show plenty of life and a strong sense of the dramatic. Although he was a follower of Arteaga, he foreshadows the new school which distinguished the following century. His 'Entombment' is one of the most notable works of the old Mexican school. Two other notable pictures of his, 'The Triumph of the Church' and 'The Triumph of Faith,' are both in the Puebla Cathedral, which also possesses several other pictures of his: 'The Savior,' 'The Martyrdom of Saint Peter of Veronica,' 'The Four

Evangelists,' in the Mexican National Academy are also good pictures.

The latter part of the 17th century, which Arteaga and Echave the younger influenced strongly, was very active in art. Juan Correa, whose drawing and coloring are excellent, painted much. His work shows freedom of execution, a firm handling of the subject and an easy swing of the brush, but his tone is often oppressive. Six great paintings of his are in the cathedral. With Correa begins a period of decadence in Mexican art. But he was a great teacher and he introduced new ideas into Mexican art which were destined to become the most noticeable motive power of the new school made famous by Ibarra and Cabrera, his two most noted pupils. He was lavish in his employment of figures, loved immense canvases and aimed at grand and imposing scenes. His grouping is artistic and the general tone of his picture is good. His characters show sincere feeling, and there is a general air of devotedness about his more deeply religious canvases. He has been rather under than over estimated by modern critics. His boldness of conception, freedom of execution and daring inspired to greater attainments his two great pupils. His 'Coronation of the Virgin,' the 'Triumph of Saint Michael' and the 'Entrance of Jesus into Jerusalem' all contain multitudes of figures, but the tone is gloomy and the coloring decidedly opaque.

Nicolás Becerra, who also belongs to the latter half of the 17th century, anticipates the characteristics of the painters of the first half of the 18th century, excellent coloring, boldness of conception and rapidity of execution. Another, Diego de Becerra, a Franciscan monk, of the same period, devoted his energies to depicting scenes and events in the history of the order. Many of his pictures were in the convents of the Franciscans in Mexico City and Puebla. Another priest, Nicolás Rodríguez Juárez, shows good coloring, simplicity of style and studied and well-executed drapery, all characteristically foreshadowing the coming school. He was the best portrait painter of his day. His 'Santa Gertrudis Offering her Heart to the Crucified Christ' (1690) is in the Mexican National Academy. Other pictures of his are in the Profesa and other churches of the capital.

Juan Rodríguez Juárez (1675-1728), nephew of José and brother of Nicolás, enjoyed a very high reputation in his day; and he had a strong influence over the younger artists, who were destined to later establish a new school. He was very prolific and many of his works survive. He painted a series of scenes of the Virgin of Tepozotlán, of which the most realistic and best executed represents the flight into Egypt, 'San Antonio,' 'San Francisco de Querétaro,' 'San Juan de Dios' are in Querétaro; an auto-portrait is in the National Academy. His are the decorative pictures for the altar of Los Reyes in the cathedral. Three paintings in the Profesa suggest Murillo. A colossal San Cristobal and the 'Vision of Santa Gertrudis' were in San Agustín Church. The 'Judgment of Saint Lawrence' (1702) is a notable picture. In the Carmelite churches are a number of his pictures and four large canvases are in the National Academy. He has a vision of the loveliness of color that re-

minds one of Murillo in no uncertain manner. He preached the doctrine of freedom from restraint and he revolted against the carefully-wrought work of the school of the elder Echave. His touch is light, his color brilliant, but his light and shade are weakly defined. He may be said to have been the father of a school that produced much brilliant work in Mexican art.

Among the other artists of this period are José Torres, Manuel Orellano, Diego Casanova, Juan de la Plaza (extravagant in coloring and execution) and Manuel Lima (coloring and drawing good). So brilliant is the coloring of the latter's work that much of it has been passed off as that of Murillo and his pictures have been gathered up and shipped to Europe, where they have been sold as works of the great Spanish master.

Cristóbal Villalpando painted from about 1683 to 1710 in a very unequal manner, but few if any Mexican artists have had freer and bolder imagination than he or greater power of execution. In his imagination there was much of the poet, but he was affected with the Gongorism of his age and exaggeration and complexity mark his best work. His coloring is weak and his larger canvases are in poor taste yet some of his decorative work is excellent.

"Pinar Manuel," a Jesuit priest, has been called the Murillo of Mexico on account of the brilliancy of his coloring, but his drawing is careless. His simplicity, boldness, and softness of coloring leave no doubt that he had studied Murillo.

José Ibarra (1688? 1756), one of the two best painters of the 18th century, followed Juan Rodríguez Juárez to exaggeration. His figures, perspective and drawing are good and the general tone of his work is pleasing and effective but he shows strongly the mannerisms of his school. He is prodigal of reds and blues, often in masses, in the style of Murillo. He was a finished artist, a tireless worker and possessed of great natural talent. Many of his pictures exist in Mexico though many have been sold abroad. Nicolás Enriquez, an ardent admirer of Ibarra, was a follower of Rodríguez Juárez.

Miguel Cabrera, the close friend and colleague of Ibarra, has maintained, for considerably over a century, his position in the public estimation as the greatest Mexican artist of the 18th century. He was a most prolific worker. Even to day, after dealers have been collecting his pictures for three quarters of a century and sending them abroad, there are still scores of Cabreras in Mexico. He lived for his art and he painted pictures as Lope de Vega wrote plays, at a hot heat, with no time to pause. In 14 months (1756-57) he painted 32 pictures representing scenes from the life of San Ignacio for the Jesuit convent, and another series of like nature for Santo Domingo. His drawing is freer and better than that of most Mexican painters and he improved much on his inspirer, Rodríguez Juárez, softening the cruder tones and shunning exaggeration. His grouping natural and excellent, his invention pleasing and full of intelligence, his coloring soft yet brilliant cast a certain amount of beauty about all his work. His taste is not so good as that of Echave the elder, his force less than that of Arteaga and his imagination less bold and free than Villalpando's; yet the general

average of his artistic qualities and the tenderness, devotion and mysticism displayed in his characterizations, easily place him in the front row of Mexican artists. His style is easy, light and comparatively free from mannerisms; and his brilliant coloring lacks the solidity of the previous school. Like Shakespeare he laid tribute upon all who preceded him, but upon all he made use of he placed the stamp of his own individuality, in grouping, painting and coloring and idealization. As he was the official painter of the Jesuits, their institutions were filled with his works. So great was his fame in his day that churches, convents, schools, the university and individuals overwhelmed him with orders and forced him to work to the limit of his capacity. With fame all kinds of honors came to him both at home and abroad. He was made official painter to the archbishop of Mexico and the archiepiscopal palace possessed many of his works. Rich churches paid him large sums to paint series of pictures for them. The mining town of Taxco engaged him to do all the decoration of the new church in that rich district and the church remains untouched to this day.

The 18th century witnessed the most active period in Mexican art, and more than 200 artists are said to have flourished during this comparatively short space of time. Francisco Antonio Vallejo, Francisco León, Juan Patuco Morlet, José Paez, Nicolás Enríquez and José Alcibar, all followers of Cabrera, reflect the characteristics of his style. Alcibar carried to exaggeration the softness of style of the school. He enjoyed a reputation second only to Cabrera, to whom he was really much inferior in talent, imagination and execution.

After Cabrera no passably good artist appeared for almost 50 years, for the enthusiasm that had built up the power of the Church in Spain declined rapidly even before the close of the 18th century; and with this decline, the erection and adorning of sacred edifices ceased, and good artists became scarce.

**The Academy Artists.**—For 50 years after the French Revolution the only artists in Mexico were Spanish professors sent over from Spain to the San Carlos Academy of Art and their pupils. Aguirre, one of these professors, painted the vaulting of the parochial baptistry of the Sagrario; and Rafael Ximeno did extensive decorating. His mural work is good but his oil paintings are poor. The 'Assumption of the Virgin' in the dome of the cathedral is by his hand. It is highly imaginative and full of action and possesses the true aerial quality necessary for ceiling decorations. Juan Saens and José M. Vásquez, two of his pupils, helped him constantly in his work. Saens took part in the decoration of the cathedral dome and Vásquez painted the 'Annunciation' and 'Jesus with the Children' in Loreto church, and 'Saint Anthony Sustained by the Angels' in the chapel of the Sagrario. José M. Castro, another pupil, has left some fairly good pictures, one of which is in the National Academy. He exhibits considerable originality in his best work.

Francisco Eduardo Tresguerras, a Querétaro artist and architect of note, did considerable interior decoration in which he shows creative power that just falls short of being great.

**The Puebla School,** in the beginning followed Echave the elder, and in general it re-

flects the influences at work in Mexico City. Its artists are inferior to those of the capital. García Feirer painted the six large figures that decorate the altar of Los Reyes in the Puebla Cathedral of which he was the architect. Diego Becerra executed a series of pictures for San Francisco Church, Puebla, 'Saint Francis in the Desert,' 'Saint Francis Accompanied by Angels,' and 'Saint Francis in a Chariot of Fire,' all of which are strong, realistic and well executed. José del Castillo and Miguel de Mendoza, an Indian prince, are two other well-known Puebla artists. Joaquín Magón painted the large mural pictures in the Puebla Cathedral sacristy, 'The Last Supper,' 'The Washing of the Feet,' 'The Protection of the Virgin,' and also a series of the 'Passion' in the Carmelite convent and another series on the same subject in the sacristy of Ocotlán, Tlaxcala. His coloring is too vivid and his work has an unfinished appearance. Miguel Jerónimo Zendejas (1724-1816) was exceedingly popular. His technique is faulty but his work is pleasing. His best picture is 'Christ Praying in the Garden,' in the Puebla Sagrario. José Luis Rodríguez Alconedo, an artist of much talent, a sculptor and a botanist, expelled to Spain for revolutionary intrigue in 1808, acquired there great facility in pastel, which he introduced into Mexico. Two of his Virgins are in the Puebla Cathedral and two fine portraits are in the Puebla Academy, one of himself and the other of a Spanish lady.

**Later Academy School.**—Among the painters of the latter half of the last century whose works are represented in the National Academy are José Obiegón, whose large painting 'Queen Xochitl,' the discoverer of pulque, the national drink of Mexico, is one of the most popular and best known in Mexico. Xochitl is represented as offering her discovery to King Tecpancaltzin, who is enthroned upon his seat of honor in the midst of his royal attendants. 'Hagar and Ishmael' is perhaps a better picture, though on account of the subject of which it treats it is not so well or popularly known. Rodríguez Gutiérrez' very striking 'Senate of Tlaxcala' represents that body deliberating on the course to be pursued toward the invader Cortés. The invention and grouping are better than the coloring. Pelegrín Clavé's 'Isabel the Catholic Attending her Sick Mother' is one of the best and most attractive pictures of his epoch. The coloring is rich and harmonious, the drawing good and the scene depicted is spirited. Juan Cordero has two pictures in the Academy, one representing 'Columbus and his Little Son at the Gate of Rábida Convent' and the other 'Columbus after the Discovery of America.' Juan Ortega's 'Meeting of Cortés and Montezuma' is full of imagination and fine coloring and is indicative of what the author might have continued to do. Salomé Pina enjoyed considerable reputation among his fellow-artists. Two of his pictures in the Academy, 'Abraham and Isaac' and 'Saint Charles Borromeo' are spirited in conception and execution. Luis Munroy's 'Roman Charity' represents a Roman girl conveying food to her imprisoned father. This and the 'Prodigal Son' and the 'Last Moments of Atala' are good pictures. Manuel Ocaranza has in the Academy two fairly good pictures in the characteristic style of the middle of last century: 'Love's

Wiles' and 'The Faded Flower' Juan Urruchi reverts to the religious school of art of the 18th century in style and subject in 'Let the Little ones come unto Me,' 'Sor Juana Inez de la Cruz' and 'San Sebastian.' Gonzalo Carrasco is represented by two pictures, 'Job' and 'San Luis Gonzaga.' The latter scene is during the plague in Rome. Juan Manchola has created two fairly good pictures in 'A Miracle of Saint Peter' and the 'Good Samaritan.'

While the period from 1800 to 1867 generally is unproductive in good paintings, one native painter, José María Estrada, does lend it interest. He has left numerous portraits marked by an ingenuousness, an elegance of line, and a harmony in composition. Nevertheless his people do not live.

**Modern Painters.**—The early 20th century Mexican artists followed their own inclinations, which, schooled abroad, gave no note of unity to their work. Preoccupation with technique later gave way to pursuit of native conceptions in subject matter. Not the least influential in this nationalistic movement has been the Mexican Revolution (1910) which brought into focus fundamental social problems. Mural painting has attracted many Mexican artists because it permits free expression of social theories and because it reaches the masses. In theme there is a predisposition toward representation of the lower classes; in technique, an effort to glorify the subject by architectural design and monumental presentation. The feeling of great latent force, of primitive rebellion against tradition, runs through these paintings. Vigor supports one's interest while the mind reads in the painting the whole history of a conquered people.

José María Velasco, an excellent landscape artist, painted with great care and detail, producing canvases that won for him renown in Europe. His coloring is delicate and true to nature and his cloud effects are especially happy. Many of his best pictures have found their way to European galleries. France conferred upon him the cross of the Legion of Honor and Austria that of Francis Joseph, and other countries have rendered like tribute to his genius.

Félix Parra does his work with loving care and in good taste. He shows invention, boldness of imagination and excellent grouping. His coloring, too, is good. Three of his pictures, 'Las Casas,' 'Galileo' and the 'Massacre of Cholula' have been photographed times without number and copies of them may be found in every curio store in Mexico. They are all striking pictures of sterling worth, in which the drawing is good, the conception vivid and the coloring in good taste. A smaller picture, the 'Flower Market,' is of greater artistic worth, but it is almost unknown, because it has always been in private possession. The comparatively small canvas is crowded with figures, all different and all true to life.

Herman Gedóvius, who received his art education in Germany and who reflects German influence, is probably the best portrait painter Mexico has produced. His early work was labored but his later shows freedom of movement and mastery of color which reminds one of the old Flemish masters. His auto-portrait in the Academy is excellent.

Leandro Izaguirre, who spent 10 years in study in Europe, is the best known of modern

Mexican portrait painters, but his imagination, execution and coloring are inferior to those of Gedóvius. Izaguirre once showed signs of possessing daring and inventiveness in his earlier works, especially in his great canvas the 'Torture of Guatimoc,' now in the Academy; but his European residence weaned him of things Mexican to the loss of native art.

Gerardo Murillo (Dr. Atl) is perhaps the most free of the younger Mexican artists, especially in Mexican landscape effects, which, on account of the high elevation of the valley of Mexico, are very difficult to analyze and depict. Very often his work is more sketchy than solid and he gains his effects in paint through the methods of the sketch artist. Yet he is generally strikingly effective. His constant search for new methods, new colors, makes for intriguing compositions, color landscapes. He is the leading landscape artist of the day.

Andrés Brios delights in painting scenes filled with figures. He inclines to historical characters and costume effects of which he has made a deep study. He has imagination, originality and daring in conception, execution and grouping. 'The Orator of the Day,' which represents parishioners complimenting the young parish priest on his sermon, displays Brios' skill in character painting and effective grouping and his love of detail in costumes and salon decorations. 'The Road to the Poor house' is a powerful picture, well grouped and full of expression in which the same love of carefully executed details are manifested.

Of those artists who briefly come before the public eye and then recede into obscurity there are many in Mexico. We have only to recall Juan M. Pacheco, Rafael Ponce de León, and Alfredo Ramos Martínez, although the last has left distinguished pupils. The «artists of social revolution» as they may be called now hold highest rank in quality painting in Mexico. They have sought the origins of their movement in the revolution and also in the popular engravings and woodcuts of José Guadalupe Posada (1851-1913), an un instructed genius who gave Mexico its best folk caricatures, its first studies of social conditions. His influence has not been direct; his work has served to call attention of later painters to a new source of inspiration, the Mexican social scene.

Francisco Goitia (1884), a leading plastic artist, has portrayed eloquently the simple but profound emotions of the people of the soil. Anyone who has studied his 'Tata Jesucristo' cannot but be moved by a deep sorrow which conjures up a whole social situation. Noted for his beautiful theatrical decorations seen in the Palacio de Bellas Artes in past seasons, Julio Castellanos (1905) has produced paintings simple and precise in outline, sensitive in emotional tone. Diego Rivera says of María Izquierdo (1906) that «the talent of this painter is well balanced and fiery, but reserved and contained, and develops more at depth than at the surface.» Her art, akin to cubism, brings out the characteristics of her subjects which strike her as most revealing.

Roberto Montenegro (1885) is remarkable for his versatility. This painter, engraver, illustrator, artist with oil and water colors alike, has left the lively lines of his mural paintings on many buildings in Mexico. He shows a strong tendency to seek the principles behind his art.



Maximo Pacheco (1907) may be taken as the representative Indian artist whose somber colors, design-like figures, show a revolt against European masters. He champions his humble race. Fernando Leal (1900) has decorated several public buildings with murals of scenes from the revolution. He catches the swirl of grouped figures. David Alfaro Siqueiros has been more before the public for his leftist political views than his paintings, although the strength of his representations cannot be denied.

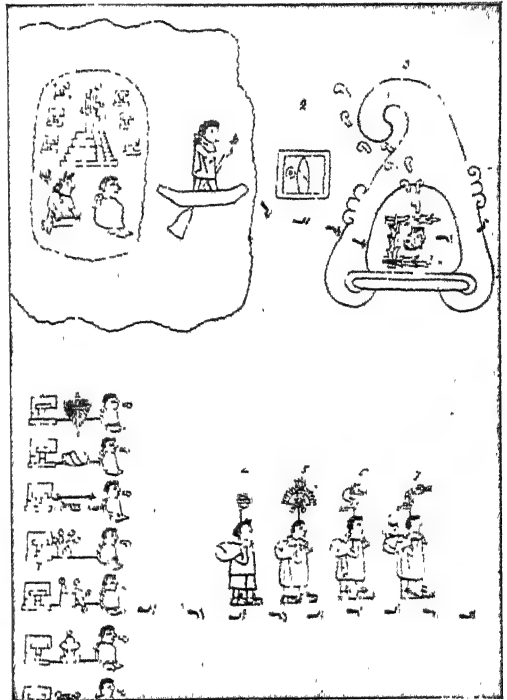
More than any other Mexican painter Miguel Covarrubias has appealed to the American public for his caricatures and type-studies of people all over the globe. He has published several books of his character studies in the United States.

There is no doubt that the two most distinguished artists in Mexico at the present time are José Clemente Orozco (1883) and Diego Rivera (1886). Orozco, a native of Jalisco, studied architectural drawing in the Mexican Academia de Bellas Artes and, since 1913, has painted murals in Orizaba, Guadalajara (School of Medicine), Mexico (Palacio de Bellas Artes

and Supreme Court building), Pomona College, The New School for Social Research, Dartmouth College, and elsewhere. His grandiose murals are characterized by architectural design, powerful muscular expression, and sobriety of color. Though like Rivera he expresses himself best in passionate illustrations of revolutionary ideology, his conceptions of civil strife are directed to revealing the profound human tragedy it embodies. Rivera, on the other hand, presents a symbolic, panoramic moral conception of Mexican social progress in his murals. His education abroad, his long experience in many media, his great energy, account for the superbly conceived murals which can be found in public buildings on both coasts of the United States and throughout Mexico. Many art critics believe that he is the greatest Mexican painter of all times, and many others hold the same opinion of Orozco.

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Revised by ERNEST RICHARD MOORE, Oberlin College.



Courtesy, The American Museum of Natural History

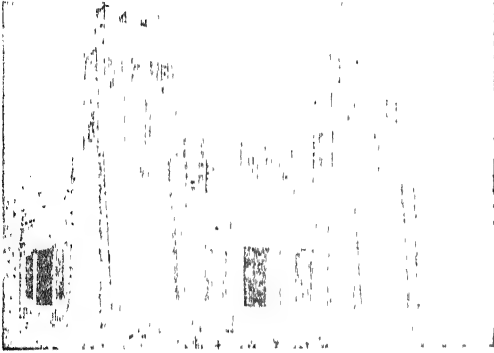


#### MEXICAN NARRATIVE PAINTING

Upper left: An Aztec ceremony (*Codex Borbomcus*)

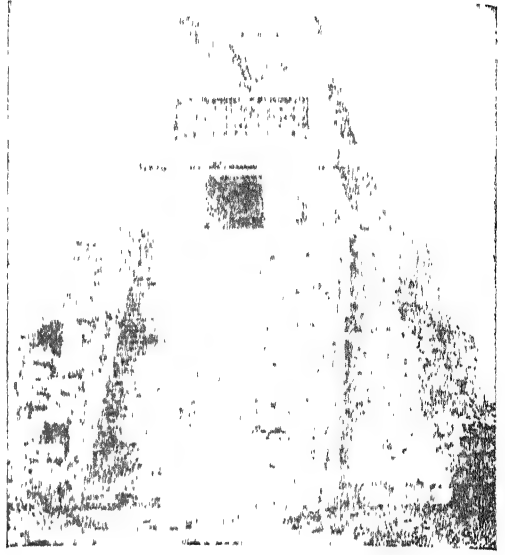
Upper right: The migration of the Nahuatl tribes (*Codex Boturini*)

Lower left: The meeting of Cortés and Montezuma (*Lienzo de Tlaxcala*).

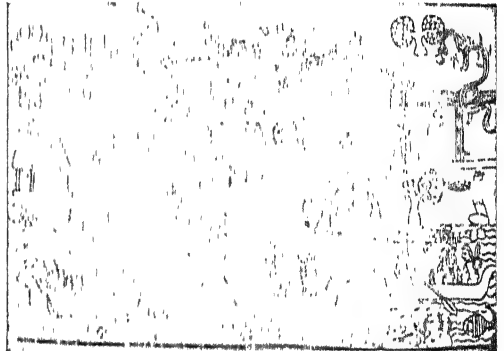


Mayan temple at Rio Bec, Quintana Roo.

**14. ARCHITECTURE. Pre-Columbian Influence.**—Mexico was by far the most important of the Spanish colonies of the mother country, which lavished upon her all the care a mother bestows upon a favorite daughter. The fabulous wealth poured into Spain from over seas she dispensed with a liberal hand in beautifying the home domain and in covering the new land she had discovered with magnificent edifices which, today, constitute the chief charm of the Spanish American countries. The activity of the arts in Spain was coincident with the duration of that vast treasure that kept constantly filled to overflowing her coffers for almost three centuries. Mexico, more than any of the other American colonies, reflected the activity of the mother country. Especially was this so in architecture and its allied arts, painting, decorating and sculpture. A famous art critic has justly said that, during the Spanish régime, there were more monumental buildings erected in Mexico than in all the rest of America. This was due to several causes. The native civilization had already produced magnificent artisans while Europe was still in the dark ages. The existing ruins of the vast, highly ornate edifices erected before Spain set foot in America compel the admiration of layman and architect alike. Of the skilled native workmen at the time of the Conquest, thousands had labored under the master builders of Montezuma and of the

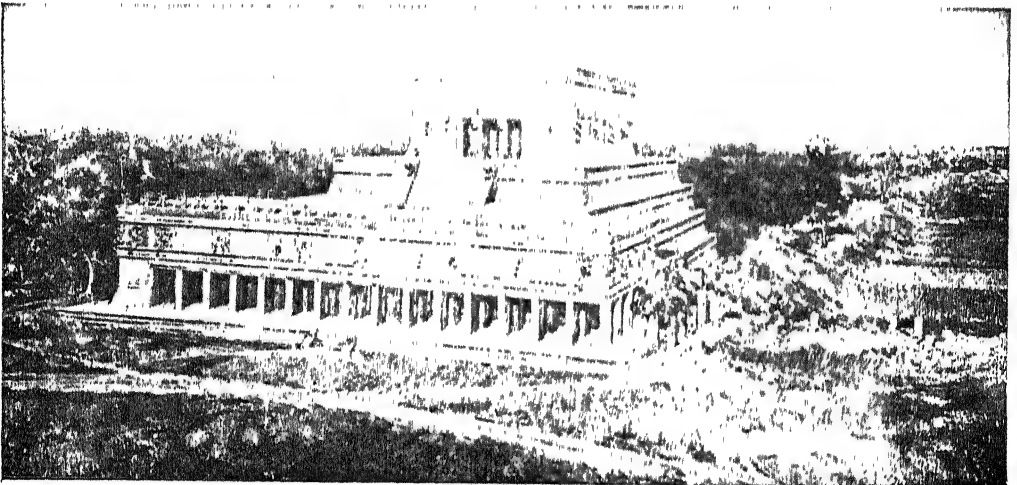


Temple, Nahua style, Santiago Huixtlico, Vera Cruz. After Dupax, 1931.



Mexican narrative painting, presenting a seashore in Yucatan (Temple of the Warriors).

Courtesy, The American Museum of Natural History



The Temple of the Warriors, at Chichen Itzá. Reconstructed by Prof. K. Conant, after Morris, 1931.



sovereigns of Michoacán, of Yucatan of the Zapotecas and the Mixtecas. For untold years Mexican artisans had been accustomed to depend very greatly upon themselves in working out their plans and ornamental designs, all of which were controlled by partially conventionalized mythological ideas and Church polity. The European architects who arrived in Mexico from Spain almost immediately after the Conquest found these native artisans wonderfully skilful and resourceful; and they soon came to realize that the surest way to get the best results was to allow them to work out ideas not from a detailed plan but from rough sketches. The result was that, while Mexico adopted Spanish architecture, it did so with modifications introduced, consciously or unconsciously, by the native workmen who brought to their task traditions that, from time immemorial, had governed their plans and the manner of executing them.

**Ibero-Indian Transition Period.**—The Spanish conquistadores were in spirit much like the Crusaders. They fought the races of America in the name of the cross, and they smote the heathen for the greater glory of God. They demolished temples; they smashed idols throughout the length and breadth of the land with religious frenzy and they leveled gigantic pyramids that had required centuries for their erection. The priests and monks who followed the soldiers continued the demolition of all evidence of the historic past of the native races. But this work of destruction called for a counter work of construction. Missionaries spread all over the land; architects were brought from Spain to the larger cities and towns, while native Indian master-builders were employed in the villages and country places under the direction of the Spanish priests who had generally some knowledge of architecture. Soon the passion for building churches, convents, colleges, schools and priestly residences became as great as that for destruction during the first quarter of a century following the Conquest.

The architecture of this first colonial period was largely affected by native Indian ideas, as all the workmen were natives. As they did not know Spanish, and their masters and overseers were unacquainted with the native tongue, they were left very much to themselves to work out their own ideas of construction, more or less in conformity with the general plan of the architect or master-builder. In beauty of form and grandeur of conception the buildings of this epoch were very much inferior to the native edifices they replaced. But it was an age of reconstruction in which the builders looked more to utilitarian ends than to beauty. While the great, Moorish-like dome was the dominant feature in Spanish architecture, even at this early date, very few churches with handsome domes or vaulted roofs were built in Mexico or in any of the other American colonies in the first half of the 16th century, for these were architectural features unfamiliar to the native artisans. These early Spanish colonial edifices were a curious admixture of Gothic, Renaissance, Moorish and native American styles. In general the plan of the building was Spanish, modified by Moorish. The roof was the flat American structure

in use in Mexico and Yucatan before the Conquest, while the ornamentation was a curious intermingling of Christian and Indian ideography and conventional European and American mythological conceptions. Compared with those that followed them, these early Spanish colonial edifices were plain and of unprepossessing appearance. But their study is both interesting and instructive, for they point to the buildings that were to come, with their mingling of the best in the art of Old Spain and of New Spain. Spanish domination brought to Mexico a tranquility and an undisputed authority lasting three centuries, during which the Spanish court directed the energies of the colony and led the way in that great revival of art such as no other American colony experienced.

Various causes combined to shape the form and character of the public buildings of New Spain. The Aztecs, Mayas and other cultured races, owing to the weakness of their knowledge of scientific construction, had been forced to erect excessively heavy walls to support massive roofs and high ornamental façades, and the builders brought to their work, during the Spanish régime, an ingrained belief in the necessity for and the beauty of sheer massiveness in the construction of walls and façades, a belief which continued throughout the 300 years of Spanish domination. Mexico has always been subject to heavy earthquakes, and these have helped to accentuate this belief in the necessity of massiveness in the construction of the main walls of buildings. The monumental edifices of the country are often more massive in character than those of Spain. The walls of some of the Maya buildings still standing are from 6 to 10 feet thick and these are equalled in massiveness by the walls of the cathedral and other great edifices of the capital.

**Building Material.**—The more durable building material of Mexico was in no way inferior to that of Spain. A score of different kinds of excellent stone, all workable, much of it handsome and some of it, like the native tezontli (lava-rock), of a character to give a distinctive appearance to edifices constructed of it; marble of a dozen different varieties; and onyx as handsome and as varied as any in the world, were all at the command of the Mexican builder. There was in Mexico for dwellings, no light, durable earthquake-resisting building material such as existed in the forests of the United States and Canada in the early years of colonization and expansion. Adobe (sun-dried earthen bricks) took the place of lumber in the construction of the houses of the lower and middle classes of the upland plateaux; and it has kept its place to the present in the public favor. Owing to the fragile nature of this material, walls constructed of it are necessarily very thick. In country places even churches are frequently constructed of adobe, which, covered with stucco, presents a very pleasing appearance. There are towns of considerable size in the interior of the table lands where practically all the buildings are constructed of adobe, and the plain mud walls of the Indian pueblos are familiar and picturesque parts of the landscape. These are constructed probably as in pre-Columbian days, and villages

themselves, with their irregular, lane-like streets, are like their Aztec progenitors.

But as adobe is not suitable for the lowlands with their torrential rains, it is replaced there by uncut stone, for the town houses, and in the villages and country by primitive thatched huts with walls of bamboo or other poles, through which the air makes its way at will. Owing to the prevailing mildness of climate all the year and the excessive heat in the hot season, these Indian huts, on the whole, meet the requirements of their occupants, who lead lives very near to nature's heart.

**The Dome and the Façade.**—The architecture of Spain was influenced by the Romans, Goths and Arabs throughout the periods of Romanesque, Gothic and Renaissance supremacy. The Greeks, Phœnicians and Carthaginians, too, have left their impress upon it. It does not, therefore, belong wholly to any one of the recognized styles; but it is, for this reason, none the less interesting. Mexico followed Spanish models more or less closely; but as the Indian mind is prone to florid ornamentation, her architecture departed, in matter of detail, of execution and of adornment, from that of Spain. The Moorish dome, with its striking appearance, its handsome tiles and its frequently elaborate adornment, appealed to the Mexicans. It is, in a sense, related to their elaborately adorned aboriginal façades, towering often from one to two stories above the habitable part of the building. The dome is seen everywhere in Mexico. It peeps out from amid the clumps of trees sheltering the little Indian village; it crowns the summit of a commanding hill; it retreats, almost hidden from sight, to some little valley amid mountain fastnesses. Everywhere majestic, it lends a touch of Orientalism to a landscape for which it is eminently fitted.

Early Spanish colonial architecture in Mexico was largely influenced by the Gothic and the Moorish; but the buildings erected after the close of the 16th century followed some one of the various phases of the Spanish Renaissance. The Mexican and the Spanish mind alike understood the value of contrast and concentration in decoration. In the Maya buildings the elaborate ornamentation which they lavished upon their monumental edifices was confined, for the most part, to the upper stories, the lower having a plain surface of cut stone or stucco. This disposition threw into relief and thus made more effective the ornate superstructure. The Spaniard confined his ornamentation to parts of the façades, to the doors and windows and the parts of the towers above the level of the roof. This had a splendid cumulative effect, which can be seen in [the illustration] the façades of the Sagrario and the cathedral of Mexico City. This ornate style of decoration was especially fortunate in having for its execution such trained workmen as the Mexican Indians, artisans with ancient traditions to work by, the initiative to give individuality to their work and the skill to put it into execution. Side by side in Mexican architecture, often mingling and blending so as to be indistinguishable the one from the other, are evidences of the many-faced traditions of the native dynasties and the influences of Spain. The free hand of the native work-

man is best seen in the earlier buildings of colonial Spain, for later on he conforms in general to the standards set him by more exacting and better trained architects and master builders. But this conformation is only outward. In the spirit of execution the attitude of the Indian mind is still strong. He has taken instinctively to the Spanish idea of cumulative effect, which, in another form, was his own, and his inclination in this direction often displays itself in florid ornamentation frequently approaching the uncouth; but it is always effective. In its adherence to Spanish forms, Mexican art is as notorious a disregarder of convention as the Spaniard himself in his adoption of the Renaissance, in building, painting, sculpture and all the arts. It is in this respect that Mexican architecture differs from that of Spain, and it is thus very different that makes it specially interesting, for we see within it the activity of the highly-developed native races of America, these ancient artist-artisans, stone cutters, wood-carvers, metal workers, tile makers and designers of all kinds, essentially thinkers, creators, builders, in love with their work of creation.

**Styles of Mexican Colonial Architecture.**—Of the early colonial edifices of Mexico, more middle age than Renaissance, one of the best examples is the church of San Francisco at Cholula, about which there still clings that mysterious atmosphere that the Indian workman lent to all he touched in the years following the Conquest, while his ancient traditions were still vividly alive.

The Renaissance soon made itself felt in Mexico as it had already done in Spain. The Moorish dome was its inseparable attendant, and New Spain, in a few years, became the centre of aimless building activity which was to cease only when the Spaniards withdrew from the country. This movement was at its height when the cathedrals of Mexico and Puebla were begun, in the latter half of the 16th century, when Mexico was under the Baroque influence; and before they were finished the Churrigueresque had supplanted it. The Puebla edifice was built more in accordance with the original Spanish Renaissance ideas of its architect; but the cathedral of Mexico, especially in its interior decorations, was strongly under the influence of these latter two ornate styles, both of which are characterized by the interruption of straight lines, the breaking of entablatures and pediments and an inclination toward unexpected arches and curves. The Baroque retains the original column of the Renaissance, but it takes liberties with it by twisting it out of its primitive shape, running it into panels and stories and decorating it in an unorthodox way.

The Churrigueresque, child of the Baroque, ran to extravagance in its love of the ornate. It made of the column a thing of decoration; it broke it into all kinds of geometrical forms and transformed it into pillars and pilasters, which became part of the mass-decoration. It laid its hand, too, upon the sculpture, making of it an integral part of the decoration scheme from whose involved mass it peeped forth just as did the curved and broken lines of the columns.

Both Baroque and Churrigueresque are char-

acteristic styles of architecture, developments of the Renaissance, influenced by Moorish and other ideas dominant in Spain at the time of its introduction. Both are splendid in their general effects, in their monumental façades and in their elaborate stone carving which, at a distance, gives to the façades the appearance of one huge piece carved from the living stone *en bloc*. This is the same impression that the great Maya buildings give. The Baroque in Spain was stamped with a strongly individualistic character, and the Churrigueresque, a very ornate development of it, became in Mexico the most truly expressive medium of the native mind. In the early part of the 18th century Mexico went mad over Churrigueresque, and all the invention, all the grotesqueness, all the fertility of imagination, all the originality of the native mind, were exercised in creating new forms of ornate and intricate adornments for church façades and interiors, which became masses of gold and silver, of richly-adorned columns and pilasters reaching to the lofty ceilings, of elaborate altars, splendid in their intricate carving, their paintings and their dominant tones of the precious metals. Intricate scroll work, fruits and shells proclaimed the influence of the native Mexican workman, while strange mythological designs showed that there still reached him echoes of the creed of his ancestors and of his pre-Columbian art. Yet the sense of proportion is ever there, and this strange mingling of various systems of art gives one the impression of a magnificent and unified ensemble. The touch of the artist is ever perceived in the best of these old colonial buildings, for Catholic mysticism, Moorish mysticism and native Indian mysticism seem to feel the bond that binds all mystics together.

**Influence of Tolsa.**—Manuel Tolsa, a noted Spanish artist and architect, who came to Mexico as a teacher in the National Academy of Art in the latter part of the 18th century, had been trained in a school that disliked intensely the Churrigueresque and he set about reconstructing the interiors of many of the public buildings of the capital, of Puebla and of other cities of Mexico. Under his direction the magnificent Churrigueresque altars and decorations were torn out of the Mexico City cathedral and replaced by very plain Greco-Roman, so that now only mutilated parts of the grand old decorations remain to give an idea of the magnificence of the interior when the most gorgeous of all the Spanish styles of architecture held supreme rule there. Fortunately, however, the north chapel of the building has been left practically untouched; the colossal façade of the Sagrario could not very well have been altered, and its interior has suffered much less than that of the cathedral. The example set by Tolsa spread rapidly and it became the fashion to decry this most characteristic of Mexican architecture; and untold harm was done to the unity of the old buildings, very few of which remain intact as their builders left them. The parish church of Taxco, the Sagrario and La Santísima in Mexico City, and San Martín Seminary, Tepozotlán, are examples of the magnificence of the old Churrigueresque churches in the days of their glory. But even of these only

San Martín and Taxco have escaped the hand of the reformer.

**Influence of Puebla.**—During the Spanish colonial period there were, in New Spain, two centres of art influence, Puebla and the capital. The former was more directly affected by the spirit of Andalusia and the Moors. Cholula, a suburb of the present city, had been a great centre of art and of building activity prior to the Conquest, and its artisans were noted throughout the Aztec empire. So the Andalusians, who settled in the valley of Puebla, found cunning workmen there to help build up the semi-Spanish, semi-Moorish industries they began establishing in the country. Excellent beds of clay in the neighborhood helped the work along, and Cholula continued, after the Conquest, the industries the skilled Toltecs had established there before the Normans had thought of invading England. Tile-making, polished marbles and onyx, handsome pottery and clay figures instinct with life and depicting the national customs, became characteristic Puebla products. This industry had a strong influence upon the architecture of the city and the surrounding country. Buildings with great Moorish courtyards and exterior and interior decorations in ornate Moresque tile patterns began to make their appearance in Cholula almost immediately after the Conquest and, on the founding of Puebla, the centre of this influence shifted gradually to the new city. Puebla at once began to reflect the thought and manner of life of Seville with which it kept ever in close touch. Cholula became a place of Moorish domes elaborately decorated with tiles. To-day the little town is exhibited as a curiosity to the tourist as much on account of its all-prevailing church domes as its famous pyramid. Towers, interiors, altars and the hitherto undecorated bulk of great buildings were covered with tiles. Private residences and government edifices followed the fashion and Puebla came to reflect more and more the influence of Seville and of Moorish Spain. As Puebla was the one great town on the high-road between the capital and Vera Cruz, it became an important distributing point; and this helped to extend her Moorish influence. Even in the capital this influence is seen in existing buildings and many others of the same style have disappeared. The famous Jockey Club of Mexico City, completely covered with bluish tile, reflects strongly this Puebla style. Some of the Churrigueresque churches, whose ornate exteriors are set against a background of Puebla tile, present a gorgeous and fascinating appearance; but in many others the employment of the Mexican Moresque is not so fortunate, for it was not always applied in good taste. Consult Wilcox, M., 'Certain Phases of Spanish Colonial Architecture' (*Architectural Record*, June 1915).

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**15. ETHNOLOGY.** Ethnologically Mexico is one of the most interesting of the countries of the Western world. Within her boundaries are represented all the really great cultured races of North America. Her territory forms the bridge of the continents over which surged backward and forward for uncounted

centuries untold races, many of whom have disappeared forever, leaving behind them buried remains of their arts, their industries, their tribal customs and remnants of their various languages engrafted upon those of the races who succeeded them.

The historic races of Mexico belong to a score or more of families, which future intenser study and investigation may or may not show to be related. Many of the languages are divided into sub-families and these into dialects, some of which are quite separate, while others blend into one another so that it is hard to determine where one begins and the other ends. But all are indicative of the presence in Mexico of many races of distinct customs, habits and religious beliefs for a long period of time, and of the changes in the distribution of these people which had already taken place, and which were continuing to take place at the time of the Conquest. Mexico, as we see it in the first quarter of the 16th century, presents but one of the many ethnological phases of her kaleidoscopic existence.

**Origin of Races.**—Beside tradition, there is no guide pointing the way to the penetration of the cloud that hangs over the past of these mysterious races, other than such aids as are lent by linguistic studies, comparative ethnological investigations, archaeological remains and such echoes of the past as have come down to us in the complicated mythologies of the various families inhabiting the western hemisphere.

Two great racial traditions in Mexico point to distinctly different origins for the two leading races of the country. Nahuatl tradition would seem to indicate that they came into Mexico from the north by way of the Pacific coast, while Maya tradition as invariably points to the east and more specifically to the coast of the Gulf of Mexico, as the direction from which they worked southward into their present habitat. And yet, when the great Nahuatl culture god, Quetzalcoatl, arrived in Mexico, it was by way of the Gulf of Mexico, and when he departed from the scene of his labors, for the unknown land from which he had come, it was by way of Coatzacoalcos (Puerto Mexico) on the Gulf side of the Isthmus of Tehuantepec. This and similar traditions have been used to prove that the Nahuatl tribes must have come from the east. Much is made of the fact that, while the Nahuas are represented, in their traditions, as coming from the north and west, Quetzalcoatl is as invariably represented as coming from the east, and that, as mythology is always older than tradition, the Nahuas must have come originally from the east and have afterward wandered north and come south again. There is nothing to support this hypothesis. It must be kept in mind that, in these traditions of race migration and in that of the movements of the culture god, there are wrapped up two distinctly different events, which, in all probability, have no relation to one another. Quetzalcoatl's office as messenger of the sun god who sent him on his mission of culture to Mexico necessarily forced him to begin his journey from the direction of the home of the sun which, according to Nahuatl tradition, was in the east; and the same reason made him sail away again toward the east when his mission on earth had been accom-

plished. The great prophet who came from the sun and the races that arrived from the west and north are, therefore, distinct in origin. The one is the creation of the imagination, the others bid us listen to the echoes of migration through several centuries of its semi-historic existence.

The origin of the Mexican people has been traced, by over zealous investigators, to almost every race under the sun—Mongolians, Tartars, Japanese, Hindoos, Malays, Hebrews, Carthaginians, Irish, Welsh, Australasians, Eskimos, Assyrians, Persians, Egyptians and Africans have been successively put forward with elaborate arguments as the original forefathers of the Mexican people. But it is only within the past half century that serious investigation along scientific lines has been undertaken by properly trained workers. The result of this investigation shows conclusively that, whatever may have been the origin of the races of the American continent, that origin is to be sought for so far back in the past that races, customs, mythologies and tongues have had time to blend and to create a vast number of sub-tongues and dialects with their corresponding tribal and clan variations. It also shows that Mexico must have been originally populated before the domestication of wild animals, and even before many of the animals of the present day came into use in the Eastern Hemisphere. The horse, the cow, the sheep, the goat, the elephant, the camel, that had become an integral part of the civilization of the Old World, were unknown in America prior to the Columbian discovery. In general the animal life of the Western Hemisphere is so different from that of the eastern that a separation of many centuries is necessary to account for this diversity. The difference in the plant life of the Eastern and of the Western Worlds is even more noteworthy.

The uses to which the pyramidal structures were put in Mexico were very different from those to which they were put in Egypt and its neighboring civilized nations. If the buildings of Mexico and Central America have any affinity with those of the Old World it is decidedly not with those of the civilization of the Mediterranean. So, after reviewing the evidence which would derive the original races of Mexico from European or African civilizations, we are forced to come back to the native traditions, which offer us the only glimmer of light in the darkness. As has already been stated, these traditions point to the north as the original home of the Nahuatl people; and investigators have taken this to mean somewhere in Arizona, New Mexico, Colorado or California. All these conjectures may be partially true, for it is probable the Nahuas were, at various stages of their exodus, in these several places. But it is still more probable that they came from much farther north and that, in their migrations southward, they followed the Pacific coast for a considerable portion of the way. There is a very suggestive similarity between the customs, culture and mythologies of the Nahuas and those of Kwakiutl people of British Columbia; and between those of the latter and those of the races of northeastern Asia whom they resemble in appearance. But striking though these similarities are, they go to

show, by their several stages of development, that a very considerable space of time must have elapsed since these widely-separated races were in contact with one another.

The similarity of the myths and customs of other western and northern tribes would seem to connect them with the Nahua and with the people of northeastern Asia. As the Nahua and the Maya show affinities in culture, customs and traditions sufficient to suggest that they had a common origin, and as the more recent linguistic and ethnological investigations would seem to confirm this suggestion, the latter probably came from the same original habitat as the Nahua; but in their journey southward, instead of keeping to the coast, they made their migration eastward across the continent.

There are, in Mexico, races much older than the Nahua and the Maya, races that have, undoubtedly, been profoundly influenced by these latter arrivals, but have retained certain characteristics which still proclaim their earlier origin. Of these the Otomí, conjointly with the Chichimeca, are credited, in Nahua mythology, with being the first races created by Camaxthi, the Tlaxcalteca creator. Primitive though these peoples were, it is almost certain, however, that they were not the aboriginal races of Mexico; for in places we meet with strange tongues, curious wrecks upon the strand of time, that seem to have no affinity with those of the races dominant in the days of Motezuma.

**Distribution of Races.**—A glance at an ethnological map of Mexico shows that the country is divided into a great number of race areas. One of these, comprising Lower California and a part of Sonora on the Pacific side, was populated, in historical times, by races of a low culture, who had undoubtedly been driven to these confines by the conquering Nahua and other races who swept over the great upland plateaux. Along the Rio Grande, in parts of Sonora, Chihuahua and Coahuila were nomadic Athapascans; while east and southeast of these was a still larger area covered by two great, distantly related families, the Packawan and the Tamaulipico, who occupied a part of Coahuila, all of Nuevo León and most of Tamaulipas. The country included between these areas already mentioned Guanajuato, Michoacán and the Pacific Ocean, was held by the Nahua, a part of whom had migrated southward into Colima, Guerrero, Morelos, Mexico, Puebla, Vera Cruz and parts of the Isthmus of Tehuantepec, of which they held both the north and the south sides. In the heart of their territory, however, were the Tarascans, who occupied the state of Michoacán, and the Otomí who held Hidalgo, Querétaro, Guanajuato and parts of San Luis Potosí and Mexico; while on the Gulf coast, stretching north from the city of Vera Cruz to Tamaulipas, were the Totonaco and the Huasteca, races distantly related to the Maya of Yucatán, Campeche, Tabasco, Chiapas, Guatemala and British Honduras. Across the southern half of the Isthmus of Tehuantepec, stretching like a great blanket into Oaxaca, Vera Cruz, Chiapas and Tabasco, lay the Zoque; and between the latter and the Nahua of Morelos and Guerrero is the home of the great Zapoteca-Mixteca race.

All these separate ethnic divisions show decidedly distinctive racial characteristics. Their languages, industrial arts and mythologies present such variations and dissimilarities as could only come from distinct races or from families separated from one another in the early stages of their tribal life. Therefore Mexican ethnology has to deal with these races as such, and also with their relation to one another and the general influence they have had upon one another ethnically; for the mixing and the blending of the races which have successively appeared in Mexico, have been going on for ages, just as they are going on to-day, with added European and other elements.

But though the native ethnic elements are gradually losing their distinctiveness, or have already lost it, as in Tamaulipas, San Luis Potosí, Nuevo León, Coahuila and northern Chihuahua, yet there are many states, like Michoacán, Guerrero, Oaxaca, Chiapas and Yucatán, where the native languages are still spoken with comparative purity. In these parts of the country racial characteristics persist.

**The Nahua** is the most important of all the races of Mexico, on account of the vast extent of territory it covered, stretching as it did from the Rio Grande to Guatemala, the number of distinct dialects and tribes included within its racial boundaries, and the influence of its religious, social and industrial customs, its political policy, its vast trade and commerce and its colonizing propensities. The extent, shape and position of the territory occupied by the Nahua to-day, which is practically the same as at the time of the Conquest, would seem to prove the truth of the tradition that they entered Mexico from the north. They drove, like a gigantic wedge, through the barbarous tribes of the great plateau lands of northern Mexico, forcing the Seri to the mountainous parts of the state of Sonora on the west and splitting apart the Apache and Toboso and crowding them back to the Rio Grande on the north, and driving the Tamaulipicos and the uncivilized tribes of southern Coahuila, Nuevo León and Tamaulipas also in the direction of the Rio Grande and toward the coast of the Gulf of Mexico. Encountering highly civilized peoples in the mountainous and easily-defended states of Guanajuato, Querétaro, Hidalgo and Michoacán, they skirted the latter on the west, making their way through Guerrero, and, pouring over the mountains to the east, overran Morelos, Mexico, Tlaxcala, Puebla, most of Vera Cruz and a part of Tabasco. A wing of the migration, coasting further south along the Pacific, left a strong colony on the southern shore of Guatemala, another in the interior and a third in Salvador, while a fourth settled upon islands in Lake Nicaragua and occupied all the land between that body of water and the southwestern coast. A fifth crossed the isthmus and took possession of territory on the northwestern shore of Panama, near the Costarican boundary line. The Nahuatl confederacy, headed by the Aztecs, extended its territorial dominion, though not successful in forcing its language on the conquered races or in assimilating them to the customs, the culture, or even to the political system of the Nahua; so that the people over whom it gradually extended its sway remain ethnically distinct to-day.

Linguistically the Nahua are divided into a score or more of distinct tribes, all speaking, with variations, the Nahuatl tongue. The Toltecs, who had disappeared as a political entity several centuries before the Conquest, were the most noted of the Nahua. They occupied a considerable part of the territory afterward held by the Aztecs at the time of the Conquest. The following tribes are now recognized as belonging to the Nahua race.

The Acaxee, speaking four closely-related dialects, inhabited the mountainous regions of Durango, between the Tepehuanes and the Aztecs. The Aztecs or Mexicans (including Tlascalans) were spread over a vast extent of territory from Tabasco, through southern Vera Cruz and across the state of Puebla, Morelos, Mexico and Guerrero, to the Pacific, and thence up along the coast, through Jalisco and Sinaloa, past the southern end of the Gulf of California. Another group of considerable extent occupies the shores of the Gulf of Tehuantepec. The Yaqui, also known as Hiaqui, Cahita, Cinaloa and Sinaloa, who were divided into three tribes speaking distinct dialects, Yaqui, Mayo and Tehueco, are closely allied to the Aztecs, with whom they have been classed. At one time they occupied considerably more territory than they do to-day. They extended over the middle and lower Yaqui, the Mayo and the Fuerte districts of Sonora. Now, so far as language is concerned at least, they are confined to the Yaqui River district. All the Yaqui tribes were energetic, patriotic and intelligent and they were one of the foremost factors in building up the civilization of Mexico. The Cazcanes occupied the mountainous districts of Jalisco about midway between Guadalajara and Zacatecas. The Conchos, now extinct, but at one time an important tribe, occupied a considerable extent of territory, lying between that of the Tarahumare on the west, the Apache on the east, the Tepehuán on the south and the Rio Grande on the north, their habitat being almost entirely within the boundaries of Chihuahua. The Cora, belonging to the northern or Sonora group of Nahua-speaking tribes, live along the Jesús María River in the state of Jalisco. The Hucholes (Guachichiles, Cuachichiles), according to Orozco y Berra, occupied parts of Coahuila, Nuevo León, San Luis Potosí and Zacatecas. They were between the Laguneros on the north, the Otomí to the southeast and south and the Zapoteca to the west. Catholic missions were early established among them; they were brought under the domination of the Spaniards and their language finally disappeared as a tribal institution. In the heart of the Yaqui country were the Nio, who lived south of the Fuerte River. The Niquirán, one of the Nahua settlements furthest south, form a small community occupying the land between Lake Nicaragua and the Pacific Ocean and also the neighboring islands in the lake. About the headwaters of the Hermosillo and Yaqui rivers, between the Seri on the west, the Apache on the northeast, the Pima on the northwest and south, was the important Opatá tribe, which consisted of two sub-tribes speaking distinct dialects, Eudeve (Heve, Dohema) and Joval (Ova). The most northern Nahua family, the Pima, was divided into the following scattered groups: Pima Alta (Upper Pima), situated

principally in the United States, but occupying a small part of northern Sonora; Pima Baja (Lower Pima), who lived around the middle part of the Yaqui River, between the Tarahumare to the east, the Yaqui to the south, the Seri to the west and the Opatá to the north; Potlapigna, near Babespe, northwest of the Opatá country, Pima de Bamoa (Sinaloa), in and around Bamoa, on the lower Sinaloa River, south of the Mayo; Tepehuán Pimas, a small group in the western part of the Tepehuán country. In southwestern Salvador are three settlements of Nahua known as Pipil and closely related to the Aztecs, while the Sigua (Segua, Xicagna, Shelaba, Chicagna, Chichagua), a small Aztec colony on the northwestern side of Panama, marks the southernmost limit of the Nahua extension. South of the Apache, east of the Concho and north of the Tepehuán, lived the Tarahumare, an extensive division of the Nahua family, covering parts of the states of Sonora, Chihuahua and Durango. They spoke a number of distinct dialects and their territory was divided into Tarahumare Alta and Tarahumare Baja. Tarahumare proper was spoken in the upper country while the tongue of the lower land was known as Chimpá. The Tepecano, closely related to the Tepehuán, occupy the territory between that of the Cazcan and the Guachichil in modern Tepic. The Tepehuán live principally in the state of Durango, south of the Tarahumare, where they are confined, for the most part, to the mountainous regions for a distance of about 250 miles.

The Olve (Olvean), a race of lighter-colored people than the tribes surrounding them, occupy territory southeast of the Pisone and Janambre, in the state of Tamaulipas. Tradition says they came from Florida, which may mean only the Gulf coast. They were superior in culture to their neighbors, but nevertheless their language has become extinct.

The Pakawán or Coahuilteco is the name given to a number of cognate tribes of southern Texas and northern Mexico. They covered considerable territory east of that occupied by the Toboso. This included, in Mexico, the eastern side of Coahuila, most of Nuevo León and the northern part of Tamaulipas. As these tribes were inclined to be nomadic and were but partially civilized, they rapidly lost their language after their conquest by the Spaniards.

**Otomí** (Hia hia). The word Otomí is used in two senses. It signifies the race of people speaking the Otomí language, and it was extended to include, in a general way, those races which from time to time formed loose alliances with the Otomí for war or defense. They have been confounded with the so called Chichimeca, and some authorities claim that they form one of the ethnic divisions of the latter very indefinite tribal designation. The Otomí, who had distinct customs and a complicated mythology, but were less civilized than the Nahua, occupied a huge, somewhat irregular, yet compact portion of central Mexico, where many of their descendants may be found to-day still speaking their ancient tongue. Their territory extended over part of San Luis Potosí, all of Querétaro and most of Guanajuato, reaching into the state of Mexico, a short distance south of Mexico City, and from there westward to Michoacán. On the east were the Huasteca, on



the southeast the Tarascans and along the northwest the Nahua. They were divided into four tribes: Otomí proper, Pirinda, Pame (northwest of the Otomí) and the Mazahua (east of the Tarascan, in the southwestern part of the state of Mexico). In the time of the later Aztec empire the Mazahua occupied the province of Mazahuacán situated in the western mountains of the valley of Mexico. They were subject to Tacuba. The Pirinda territory was principally in the valley of Toluca, and some descendants still live in villages in the land of the Mexicans, others in Tarascan territory. The Otomí were a numerous, industrious and fairly intelligent race.

Under the heading of "Rio Grande tribes," Orozco y Berra groups a number of native communities occupying territory in the state of Tamaulipas at or near the mouth of the Rio Grande River, but he furnishes no further data respecting them with which to classify them, but as the Indians of this district no longer retain their tribal organizations, and as their languages have also disappeared, little is known of their pre-Columbian culture.

The Seri, who occupied a considerable extent of territory on the mainland opposite the peninsula of Lower California, where their language is still spoken to some extent, are classed among the less civilized of the Mexican races. Their territory stretches inland into the mountain region for 150 miles or more from the coast, and includes the island of Tiburón (shark) in the gulf.

Under the head of Tamaulipeco, Orozco y Berra, who has paid more attention than any other investigator to the races of Tamaulipas, where the native languages have all practically disappeared, gives the following tribes: Tamaulipeco proper, Canaynes, Quinicuanes, Borrados, Tedexenos, Pasitas, Tagualilos, Caribayes, Matiguanes, Panguayes, Anacana, Caduna, Guixolotes, Pintos, Comecrudos, Malinchenos, Ancasiguais and Aetlines.

The Tarasco (Michoacano), occupying approximately the state of Michoacán, speaking a distinct language and having customs, myths and traditions different from those of the other races of Mexico, form one of the important racial divisions of the republic. They are a highly cultured people and, in the time of the Aztec empire, they maintained a separate, independent government.

From the city of Vera Cruz northward to the Huasteca and inland to Tlaxcala, lie the Totonaca, almost completely surrounded by the Nahua. They were a cultured race at the time of the Conquest, and it was among them that the conqueror, Cortés, established the first Spanish government and colony on the mainland of the American continent.

Two cognate tribes, the Waicuri and the Pericu, occupy the southern end of the Isthmus of Lower California. Their languages, which are still spoken, are very badly corrupted.

The Yuma family is represented in Mexico by the Cocopa (Cucapa) and the Cochimi, who occupied all but the southern one-fourth of Lower California. The native tongue is already badly corrupted and is fast disappearing.

The Zoque, stretching over four and one-half degrees of longitude, across the Isthmus of Tehuantepec, from east to west, and occupying parts of the states of Oaxaca, Chiapas and

Tabasco, are surrounded by Zapoteca, Chinanteca, Maya and other races. The Zoque family is divided into four branches, Mixe to the north and west of the main territory, Zoque proper, to the south and east, Tapachula, in the southeastern corner of the state of Chiapas, on the Guatemala boundary line, and the Popoloco in the state of Puebla.

The great Athapascan family is represented in Mexico by the Toboso and the Apache. The area and location of land occupied by these two nomad, warlike tribes changed from time to time, but, roughly speaking, the Apache occupied an irregular territory, stretching southward from the Rio Grande and the American boundary line for a distance of five degrees of latitude, from about 105° westward, covering parts of Chihuahua and Sonora. But they often raided over the northern part of the latter state far into the interior. The Toboso also occupied territory stretching from the Rio Grande southward, but their general habitat reached eastward from the western boundary line of Coahuila, within which state they lived in normal times. They often joined hands with the Apache in raids on the more civilized parts of the surrounding country; and they frequently gave the United States and the Mexican governments considerable trouble. Sometimes the depredators took refuge on the American side after a raid on Mexican citizens and vice-versa when they had raided American territory.

In and around the town of Chinantla, south of Vera Cruz, occupying territory about 100 miles in extent, are the Chinanteco, who are probably a survival of one of the ancient races who populated the country before the arrival of the Nahua. The Huave (Huabi, Guavi, Juave, Wabi), another primitive race, occupy the marshes around the great lagoon which forms the northern inlet of the Gulf of Tehuantepec. Tradition says they once possessed all the isthmus country and that they came from the south. The Janambre, a third primitive tribe of a very warlike disposition, who occupied the rugged southwest of Tamaulipas, from a short distance north of Victoria to the southern boundary of the state, about 100 miles, gave the Spaniards much trouble before they were finally conquered toward the close of the 18th century.

To the south and east of the southern Nahua and stretching from Guerrero to the Isthmus of Tehuantepec was the home of the great Mixteca-Zapoteca family, which in culture, intelligence, enterprise and achievement was scarcely inferior to the Nahua and the Maya, between whom they seem to have been the medium of communication and of the distribution of the arts and sciences. They possessed a culture which, while it resembled that of the Maya and Nahua, was nevertheless distinct. The Mixteca whose territory extended into parts of Puebla, Guerrero and a considerable portion of Oaxaca, were surrounded on the north and west by the Nahua, while the Zapoteca were their neighbors on the east. They had an outlet on the Pacific Ocean to the southwest, which they may have possessed for a long time, since it is the boast of one of their oldest legends, that their great culture hero, Yucano, defied the Sun, engaged him in combat and drove him into the ocean. The Mixteca lan-

guage is still spoken over most of the Mixteca country. The traditions of the Mixteca make them an alien race fighting desperately for years for their existence, in the mountains, a part of which they were forced to abandon. The rugged nature of the country in which they lived created, in time, numerous dialects of the Mixteca. To the east and partly to the south of the Mixteca country lay that of the Zapoteca, stretching for a considerable distance along the Pacific Coast and occupying the southern side of the Isthmus of Tehuantepec, reaching north and west of the city of Oaxaca and including the famous valley of Oaxaca, in the mountainous districts of which the native tongue is still spoken with comparative purity. The pottery and the metal work of the Mixteca and the Zapoteca were sought by the Mexican merchants, who distributed them over a wide area of country.

The Maya family, the most highly civilized of all the native races of America, is divided into two great groups, the Maya and the Kiche, to which may be added the Huasteca. The Maya proper, within whose territory were contained most of the semi-historical cities of the more advanced culture of Mexico, were spread over all the peninsula of Yucatán, eastern Tabasco, British Honduras and the island of Carmen. They were divided into Lacandón, Mopán and Itz'at or Petén, three tribes speaking slightly different dialects. The Lacandón still inhabit a region near the headwaters of the Usumacinta River, in eastern Chiapas and northern Guatemala. They were once a very extensive and important people, but their ancient greatness has disappeared. They still speak their native tongue. The territory of the Itz'at occupied a part of northern Guatemala and eastern Yucatán stretching westward probably to Campeche and southward to Chiapas. The Mopán occupied an undefined territory partially in southern British Honduras, Guatemala and Chiapas. To the south of them were the Chol, also a Maya tribe, to the west the Lacandón and to the east and north the Itz'at.

The Huasteca, a tribe situated far from the parent stock, and extending from Tampico southward and westward is wedged in between the Otomí on the west, the Nahuatl, Totonac and Tamaulipas tribes on the north. It was once a powerful nation and the people of to-day still bear all the racial characteristics of the Mayas.

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**16. LITERATURE.** Among the many cultural achievements of the native inhabitants of New Spain was a thriving literature. Chronicles of the wandering, of the tribes had long been kept on folding books made of maguey paper. Native scribes recorded their thoughts by means of ideograms. Thousands of these books or codices were burned by Spanish zealots who believed them to be obstacles to the salvation, through Christianity, of the pagan peoples. A few codices have been preserved and it is from them that much of our knowledge of early Indian cultures derives. In addition there existed a large body of legends and poems which specially instructed orators passed on from generation to generation by word of mouth. This literature would have disappeared with the conquest of the natives had not the Spaniards supplied, in the phonetic alphabet, a means for its preservation. The well-trained and highly intelligent native writers were persuaded by early missionaries to compile by means of the new phonetic symbols their chronicles, oral traditions, and religious rites. Thus they did by phonetically transcribing in Nahuatl, Quiché, and other Indian languages, much of their "floating literature." Spanish clerics, conversely, learned native languages and translated these native annals, often quite strictly. The so-called 'Códice Ramírez,' properly a translation of ancient Mexican history into Spanish by Father Juan de Tovar (?), is a good example of this process. These post-Conquest chronicles make up, in part, for the loss of the pre-Conquest codices. Nevertheless our records are but a small part of an extensive literature flourishing in the first half of the 16th century. We owe much to such missionaries as Diego Durán, a native of Texcoco, the seat of the Aztec Empire; Bernadino Sahagún, who first came to America in 1529; Diego Reynoso (?), who wrote down in Quiché the famous Mayan traditions known as the 'Popol-Vuh'; and other historians contemporary to the Conquest. The bulk of native poetry known today derives from one invaluable manuscript collection, the 'Cantares Mexicanos,' which luckily survived the ravages of time and indifference finally to be printed and translated into Spanish, German (in part), and English at the turn of



the 20th century. These poems deal mainly with the deities worshipped by the Indians. Contemporary historians tell us that singers were schooled in the temples to sing the praise of Huitzilopochtli, Tlaloc, and other gods. We also know that the Indian monarchs listened eagerly to «songs about their greatness and their victories and conquests and noble lineage and their awesome wealth» (Durán). But if verse served the purpose of gods and the pride of kings it also exalted the passions of commoner folk. Durán complains that «songs of love and flattery» affected the proper comportment of natives whom he proposed to convert. These poems, remarkable for their involved metaphors not always decipherable today, were recited or sung with a musical accompaniment, which imparted to them a rhythm now lost. Rime was not used. The principal poet among the Aztecs was the great Netzahualcōyōtl (c. 1440), king of Texcoco. Living in the Golden Age of Mexican culture, he used his talents and wisdom to better the lives of his people. But he was also a philosopher and poet, for he sang the warning that «all is like the bouquets of flowers which pass from hand to hand, which finally fade and flee this present life».

Cortés in one of his *Cartas* makes known the existence of native drama by describing an open-air stage set up in a market place. From other writers it is evident that the indigenous theater had developed out of pantomimic dances executed before the altars of the gods. Although no authentic native dramatic compositions have come down to us, contemporary missionaries describe them as highly symbolic in meaning and not devoid of slapstick comedy.

The evangelization of the conquered peoples of Mexico came as the prime task of the Spanish friars and priests in the 16th century. Largely as a consequence was the press founded (1539?) and the Royal University opened (1553). Priests became learned linguists who wrote and published, from 1539 on, grammars, catechisms, and tracts in Náhuatl, Otomí, Tarasco, Maya, and other languages. Among the most notable of these writers were Pedro de Gante, who published the first 'Doctrina' (1547) in Náhuatl, and Alonso de Molina, author of an excellent dictionary and grammar (1571) of the same language.

Other linguists left as monuments to their industry valuable histories of New Spain's ancient civilizations. Bernardino de Sahagún, a Franciscan friar, wrote and rewrote in Spanish and in Náhuatl a superb 'Historia general de las cosas de Nueva-España' (first published 1829-30); another of the Franciscan Order, Toribio de Benavente, who took the native word for «poor» as his own name, «Motolinia», wrote a history of ancient Mexico (published 1858); a Dominican friar, Diego Durán, left an interesting and detailed study called 'Historia de las Indias de Nueva España,' which did not reach the press until 1867. No less important as an account of the conversion of pagan New Spain is Fray Jerónimo de Mendieta's 'Historia eclesiástica indiana' (published 1870). Mention hardly needs to be made here to that classic of Mexican histories, the 'History of the Conquest of New Spain' (1632), which Bernal Díaz del Castillo left in remembrance of the Cortés campaigns. Numerous other histories seen and described by José Mariano Beristáin a century ago in his

'Biblioteca Hispano Americana Setentrional' (1816-21) have since disappeared. More fortunate were José de Acosta and Fernando de Alva Ixtlilxochitl, whose histories have been preserved.

The post-Conquest drama in Mexico did not develop out of indigenous beginnings; it was brought in from Spain as a device for edifying the newly converted peoples. The development of religious drama in Europe was recapitulated step by step in Mexico, with, as was natural, an accelerated pace. Miracles, the passion, and the lives of saints formed their substance. They were presented inside and outside the churches, in Spanish and in native languages. 'Judgment Day,' the first play mentioned in contemporary writings, was presented in Santiago Tlatilulco in 1533. It must have been popular, for many other plays followed it. In 1539, to celebrate the signing of a peace treaty by Charles V and Francis I, the first secular production, 'The Conquest of Rhodes,' was staged. The Jesuits soon after their arrival in 1572 established the custom of giving school plays. Of these only one, the five-act 'Triunfo de los santos' (1579) remains extant. Aided by cash and prize awards, certain authors made yearly contributions to the religious and secular stage. Most of these never went into print. Before 1600 two theaters or *Casas de comedias* were in use. Space permits the mention of only two Mexican dramatists: Juan Pedro Ramírez (b. 1545) and Fernán González de Eslava. The former, the first native-born American dramatist, wrote the symbolic drama 'El pastor Pedro y la Iglesia Mexicana' to honor Pedro Moya de Contreras upon his investiture as Archbishop of Mexico (1574). The plays of Eslava, 16 *coloquios* and one *entremés*, appeared in a posthumous collection, 'Coloquios espirituales y sacramentales' (1610), though they had been written and enacted during the last third of the previous century. This is the only considerable collection of the century. In judging these plays it has to be kept in mind that they served not art but their audience. Viewed in this way they stand as signposts and monuments to the cultural aspirations of colonial Mexico.

That linguistics and history did not attract all writers is proved by the fame Fray Alonso de Veracruz earned with his studious philosophical treatises. No less remarkable are the works on medicine by Dr. Francisco Bravo ('Opera medicinalia,' 1570), Alonso López de Hinojosos and Agustín Farfán; the 'Diálogos militares' (1583) by Dr. Diego García de Palacio; and the first American collection of laws, the 'Cedulario de Puga' (1563).

In days when men fought to bring European dominance to America and American wealth to Europe, poets with little stake in either enterprise could not flourish. Yet a few versifiers on public occasions raised their voices and found audience. Not until 1585 did a real opportunity—the sessions of the Third Mexican Concilio—present itself. Then, according to Bernardo de Balbuena, by exception a real poet, 300 «poets» put in an ephemeral appearance. Fernán González de Eslava, commenting on their number said bluntly: «hay más poetas que estércol»! Omitting mention of famous Spanish poets who came to visit New Spain we shall refer only to three native writers of verse. The first poet born in Mexico and perhaps in America was

Francisco de Teirazas (b before 1519), whose extant poems, recently edited, seem to belie Cervantes' praise of him in the *Galatea*. 'Honest mediocrity' states the famous Mexican critic, Joaquín García Icazbalceta. Saavedra Guzmán wrote a long epic poem about Cortés, 'El peregrino indiano' (Madrid, 1599), which is more important as a chronicle than as a work of art and imagination. Some critics consider Bernardo de Balbuena (c 1562-1627) the founder of Mexican and American poetry. His 'Grandeza Mexicana' (1601), «a sort of poetical topography,» eulogizes in rich, if pompous, verse this country in which he lived many years. Mexico proudly ranks him among its greatest poets.

Francisco Salazar Cervantes, a keen observer and intelligent teacher, wrote the only «light» literature published before 1600 in New Spain. His 'Diálogos' (1554) describe in excellent Latin social and intellectual life. They were intended as additions to the dialogues of Luis Vives with which they were used as class texts at the university. They not only are pleasant to read but also form an invaluable document of society at that time.

**Seventeenth Century**—Marked by lively polemics between episcopal authorities and religious communities (e.g. Juan de Palafox y Mendoza, Bishop of Puebla versus the Company of Jesus) and circumscribed by religious conventions, literature nevertheless set the pace for cultural advancement. Regional historians (Antonio Tello), chroniclers of religious orders (Grijalva), and writers of pious traditions (Flores) flourish. The most fecund theme by far for pious writers has been the miraculous appearance of the dark-skinned Virgin of Guadalupe before Juan Diego, a humble Indian, for the purpose of founding a temple in her honor. Her image was left imprinted upon his carrying net so that the bishop would believe in the apparition too. Apparitionists and their opponents have kept the Mexican press busy through the centuries, from the time of Valeriano (16th century) to that of Father Cuevas, marshaling facts and opinions in support of their opposed beliefs. Ignacio M. Altamirano left in his 'Paisajes y leyendas' (1884) an interesting study of this tradition. Mariano Cuevas recently issued a scholarly memorial volume of *guadalupana*.

The production of grammars, dictionaries, and treatises continued during this century. These were written in or about the native languages. Latin, on the other hand, remained the chief language of serious and occasional literature alike. Numerous Latin inscriptions, epigrams, distichs, and long poems adorned the preliminaries of learned books or filled memorial volumes when famous personages came to the new—or left for the future—world. Spanish verse also increased in quantity. In a literary contest sponsored by the university and dedicated to the Immaculate Conception of Virgin Mary, over 300 compositions were submitted. Compiled by Carlos de Sigüenza y Góngora these poems, in the 'Triunfo Panthénico' (1682), represented the triumph of a Spanish literary mode, Gongorism, over real poetic creation. Sigüenza, the most learned man of the century in Mexico, though opposed to this attempt to pour Spanish back into Latin syntactical moulds, nevertheless was himself influenced by it. But only in his poetry. His 14 published and 30-odd manuscript

writings were noteworthy contributions to letters ('Infortunios de Alonso Ramírez,' 1690), journalism ('Mercurio volante,' 1693), history ('Parayso occidental,' 1683), and especially to science ('Libro astronómico y filosófico,' 1690). Most of his manuscripts, including valuable histories, have been lost. A similar fate has met the philosophical treatises propounded but never published by a dozen other authors.

In the collections of poems described above, both religious and secular verse appeared. Religious topics gave greater freedom of expression to poets in those days than did the eulogies written for the king or for friends. Few read these poems nowadays. Even the very popular 'Canción a la vista de un desengaño' which once brought great fame to its author, Matías Bocanegra, who sought to glorify religious life, now is forgotten. The «salaried poet» of the Mexican Cabildo, Arias Villalobos, fared no better. One poet shines alone in the obscurity of this century, Sor Juana Inés de la Cruz (1651-95). Possessed of a rare talent and a burning mysticism, this great writer broke for a time at least the bonds of her age and sang of sacred and mundane love as no one ever had before in the New World. Her poems, such is their power and universal appeal, still stir the modern heart. A splendid drama, 'Los empeños de una casa,' is among her achievements. Though appreciated by men like Sigüenza y Góngora, she was commended by clerics of meaner spirits to abandon learning and the arts for solitude and silence. Their officiousness lost much for the nation.

Another of the greatest of Mexican writers also belongs to this century. Juan Ruiz de Alarcón (c. 1580-1639) though born in Mexico wrote for the Spanish stage. Both countries claim him now although neither rewarded him during his lifetime for his dramatic creations. These, in perfection of style and technique and in excellence of character portrayal, surpassed the plays written by Lope de Vega and other great Golden Age Spanish dramatists. It does not matter that Alarcón's plays developed outside the Mexican literary situation. His plays are Mexican for the reason perhaps there are others that works of art belong to the people who can understand and appreciate them.

**Eighteenth Century.** The false literary notions of 17th century euphuism continued to restrain fine poetic expression during the following century. The same schooling of the Jesuits in the classes and the response to French influences, in Spain and New Spain, later in the century started a classical reaction against euphuism which put new life into Mexican letters. José Manuel Sartorio (1746-1829) and José Manuel de Navarrete (1768-1809) are foremost among the poets. The former's verse now seems prosaic; the latter still enjoys a reputation for graceful odes and sonnets. Only recently was it learned that in his many delicate songs about Clorila he had other than an imaginary lady in mind.

Literary contests continued to excite, on propitiations occasions, native writers to win the poet's laurels. 'Obras de eloquencia y poesía' (1791), produced upon the ascension of Charles IV, seems hardly more than testimony of loyalty on the part of colonial intellectuals. No sincere passion or deep felt emotion transforms these verses into living art.

The laurels really go to three Jesuits who honored the country which expelled their order (1767) with their Latin works in the best humanist tradition. Diego José Abad published a poem, 'Musa americana,' on the attributes of God, in Cesena in 1769. Rafael Landívar, 'one of the best poets of modern Latinity,' belongs to Mexican literature because of his 'Rusticatio mexicana' (Bologna, 1782) in which he described the beauty of Mexican countryside and customs; Francisco Javier Alegre (1729-88) left in addition to several original and translated epics a history of the Jesuits in Mexico. Also a Jesuit, Francisco Javier Clavijero published abroad a comprehensive history of Mexico, 'Storia antica del Messico' (1780-81), and a useful reference work for American historians, his 'Storia della California' (Venice, 1789). The histories written by Mariano Veytia and Andrés Cavo during the same period appeared in print in the next century. The first attempt in the Americas to compile a bio-bibliography of native writers was the work of Juan José de Eguara y Eguren. His 'Bibliotheca mexicana' (1755), incomplete and difficult to use, is still a useful source book. In its day it won fame for the author and esteem abroad for Mexican writers.

Two theaters existed in Mexico, and at least three theatrical companies brought the famous Spanish plays of the Golden Age to Mexican audiences. Mexican dramatists failed to continue the remarkable dramatic genre created by Sor Juan and Alarcón.

This century in Mexican literary annals cannot boast of many achievements. Mexico did, however, keep ahead of other Latin American nations. Particularly important is the appearance in Mexico City of the *Gaceta de México* in 1722, the first American periodical. Its editor, Juan Ignacio Castorena y Urisá. A few years later Francisco Sahagún y Arévalo established a homonymous successor to the short lived *Gaceta*. The scientist José Ignacio Bartolache issued his *Mercurio volante* later in the century (1772-73). Then José Antonio de Alzate y Ramírez (1799), a sincere lover of learning and one of Mexico's greatest scientists, published a series of periodicals between the years 1767 and 1794 which raised journalism to a very high plane. From a literary point of view his most valuable journal was the *Gaceta de literatura* which appeared intermittently from 1788 to 1794. It contained for the most part profound treatises on botany, astronomy, and mathematics; its poems and articles of literary criticism are interesting for the light they throw on the decline of belles lettres. Alzate sternly criticized the writings of Joseph Rafael Larrañaga, a minor poet, and Joaquín Bolaños, an early novelist.

#### Nineteenth and Twentieth Centuries.—

Two facts greatly influenced the course of Mexican letters in the opening decades of the 19th century: the increasing freedom of expression which finally became an open revolt against the controlled press; and the concomitant increase of literary media. Until independence was fully achieved in 1823 pamphlets, broadsides, and periodicals served as weapons to combat Spanish dominance in the colony. What was written was intended for the time and for a purpose; now it appeals only to the historian. In the period of national reorganization which followed independence a consciously national literature came into being.

Among the last of the colonial poets, writing in competition with the dozens of versifiers whose poems were published in the *Diario de México* (1805-17) and the *Gaceta de México* (1784-1810), was one real poet, Manuel Navarrete, mentioned above. His sad songs were an elegy on the disappearing colonial Mexico. His contemporaries, for example, Anastasio de Ochoa, Agustín Pomposo Fernández de San Salvador, and José Agustín de Castro, wrote little of lasting value. The generation of poets who followed them—Francisco Severo Maldonado, José María Cos, Andrés Quintana Roo, José Joaquín Fernández de Lizardi, all Mexican patriots who fought in the War of Independence—sang with more fervor though not with more artistic results. The romantics, Fernando Calderón (1809-45) and Ignacio Rodríguez Galván (1816-42), added to the nationalistic note a lyrical strain. Passionate love and tragic sentimentality inspired their songs. Both were playwrights popular on the Mexican stage. Later in the century Manuel Flores (1840-85) and Manuel Acuña (1849-73) added to romanticism deep sincerity and profound emotion, respectively. Side by side with romanticists there wrote a group of eminent classicists. José Joaquín Pesado (1801-60), Manuel Carpio (1791-1860), and Alejandro Arango y Escandón (1821-83), all inspired principally by religious themes. This group also had its dramatist of stature in Manuel Eduardo de Gorostiza (1789-1851). His plays, published abroad, gained him considerable fame in Spain. Guillermo Prieto (1818-97), a fecund poet of the people, and Ignacio Ramírez (1818-79), a free-thinker classical in style and clarity of thought, went their individual ways and yet exerted more influence upon later writers than most of their contemporaries.

Manuel Orozco y Berra (1818-81), Lucas Alamán (1792-1853), Carlos María Bustamante (1774-1848), and before them Fray Servando Teresa de Mier (1765-1827), José María Luis Mora (1794-1850), and Lorenzo de Zavala (1788-1836), made distinguished contributions to 19th century history. Bustamante, though not scientific in his methods, rescued several ancient histories from oblivion by publishing them at his own expense. Orozco y Berra has come to be regarded as the leading historian of the century.

After the pathetic Maximilian had been de-throned by Juárez and his republican army, Mexico enjoyed a rebirth of national energies. Literature was signally benefited. Curiously enough a pure Indian writer, Ignacio M. Altamirano (1834-93), led the renaissance movement. When Mexican intellectuals returned from the fields of battle he led them upon another front, founded literary magazines (*El Renacimiento*, 1869), literary circles (*Veladas literarias*, 1868), societies (Mexican Academy, 1875), and established a genuinely nationalistic program for Mexican men of letters (*Revistas literarias*, 1868). The greatest advances were made in the novel, studied later in this article. The romantic and the classical schools continued to find supporters. Acuña and Flores best represent the former; Ignacio Montes de Obregón (1840-1921), Joaquín Arcadio Pagaza (1839-1918), and Manuel José Othón (1854-1906), the latter. A new movement, coming originally from France, gained ground in Mexico and produced some of Mexico's best poets. Stemming from the Parnassians, Manuel

Gutiérrez Nájera (1859-95), initiated modernism in Mexico. His delightfully graceful poems (and short stories) appeared mainly in the *Revista Azul* (1894-96), which became the celebrated organ of the new poets. The *Revista Moderna* (1898-1911) and Amado Nervo (1870-1919) are intimately linked together in the further development of modernism toward a new vivacity, freedom, and simplicity of expression. Other outstanding poets in this group: Salvador Díaz Mirón (1853-1918), Luis G. Urbina (1868-1934), José Juan Tablada, and, most famous of living Mexican poets, Enrique González Martínez (1871).

On the Mexican stage many Spanish and French plays (translated) were given during the 19th century. Native writers of the second half of the century did not succeed in mastering the genre. The dramas written by José Rosas Moreno, Alfredo Chavero, and José Peón y Contreras (1813-1907) are now all but forgotten. Only José Joaquín Gamboa (1878-1931) of later writers has a just claim to original and forceful dramatic composition.

A word at least is due Luis González Obregón and, especially, Joaquín García Icazbalceta (1825-91), whose deep love for, and learning in, Mexican history and literature created at home and abroad a new respect for Mexican letters. One of the major accomplishments of Mexican scholarship, as well as one of the finest examples of typography, is the latter's *Bibliografía mexicana del siglo XVI* (1886).

In the 20th century Mexican writers are distinguishing themselves in many fields. Among the critics Alfonso Reyes holds first place, after him, Emilio Abreu Gómez, Julio Jiménez Rueda, Francisco Monterde. Experimentation has been carried on in poetry by Ramón López Velarde (1888-1921), Xavier Villaurrutia (1903), and others. Juan B. Iguíniz and Mariano Cuevas have investigated Mexican history. José Vasconcelos, Eduardo Ramos, and Antonio Caso stand out as philosophers in a field which is growing rapidly.

The influx of Spanish refugee writers into Mexico since the Spanish Civil War has had a salutary effect upon native writers. Many new literary publications of high merit have been founded. And a new impetus is being felt in philosophy, philology, literary criticism, and the novel.

**The Mexican Novel.**—The pre-eminence of this genre in modern Mexican literature calls for a separate treatment here. A careful scrutiny of early Mexican prose reveals clear forerunners of the novel, which, it is generally agreed, began in 1816 with 'El Periquillo Sarmiento.' Four of these, never published, have disappeared, leaving colonial literature the worse therefor. The first novel written and published in New Spain was, beyond all doubt, Francisco Bramón's 'Los sirgueros de la Virgen' (1620), a religious pastoral novel. It enjoys the distinction of being the first novel written in the Americas by a native-born writer. Carlos de Sigüenza y Góngora novelized the travels of a Spanish trader in his 'Alonso Ramírez' (1690) in order to please Viceroy Galve, while Marcos Keynel Hernández in 'El peregrino' (1750-61), a mystical 'Pilgrim's Progress,' and Joaquín de Bolaños in 'La vida de la muerte' (1792), a prose Dance of Death, gave evidence that the

church tried to monopolize fiction to prevent its secularization. From a study of the ideas presented in these novels and the circumstances of their publication, the reasons for the late appearance of the modern novel become clear. The novel, as a genre continuously developed, resulted from the concurrence of many historical factors: the declaration of independence from Spain, the profanization of literature, the establishment of a society rich enough to support writers and liberal enough to unshackle them, the rise of an educated class with leisure for reading, and the preoccupation of writers with their immediate environment. When this juncture took place, Mexico's first great novelist, José Joaquín Fernández de Lizardi, came into prominence.

Lizardi (1776-1827) looked upon the novel as an effective vehicle for the ideas he had previously disseminated in his satirical periodicals and pamphlets. 'El Periquillo Sarmiento' (1816) revived the Spanish picaresque novel in order to re-evaluate according to new standards all social classes in Mexico. 'Noches tristes' (1818), imitating Calisto's 'Noches lúgubres,' disguised an attack upon the miscarriage of justice. 'La Ovejuna' (1818-19) adapted Rousseau's 'Emile' to the needs of Christian Mexican women. 'El Catín de la Hacienda' (1822) castigated the poor *hidalgo* type by depriving him of the means for indulging his pride; all served as weapons with which Lizardi sought to defeat ignorance, bigotry, and anti-social conduct. With a wealth of ideas borrowed from Christian moralists and French rationalists, Lizardi waged bitter battle on his conservative opponents and won a victory so decisive that his liberal ideas have had a lasting influence upon the course of Mexican letters.

Mexican romantics, while giving free play to their lyricism, fantasy, and individuality, erected the structure of the novel upon a base of realism. In doing so they responded to the dictates of Lizardi's realism and rationalism as well as to those of their own temperaments. Though many later novels could be called romantic, only the works of three writers of note properly fall into this category. Fernando Orozco y Beira (1822-51) related a sentimental history of his amours in his only novel, 'La guerra de tres años' (1850); Florencio María del Castillo (1828-63) wrote several romances of platonic love, of which 'Hermana de los ángeles' (1851) is the best; and Juan Díaz Covarrubias (1837-59), in his 'Gil Gómez' (1858), placed a sentimental tale of disappointed love against the vivid background of the *hidalgo* uprising. Another novelist, Justo Sierra O'Reilly (1814-61), though not unresponsive to romanticism, in his historical novels, 'Un año en el hospital de San Lázaro' (1845) and 'La hija del judío' (1848-50), achieved the balance and proportion in plot and characterization typical of classical writers.

After Lizardi realism in the novel did not disappear. The background for romantic novels and the historical descriptions in Justo Sierra's works are realistic. Finally re-establishing its former importance realism becomes the fundamental law in all of Manuel Payno's (1810-94) novels, 'El fístol del diablo' (1845-46), 'El hombre de la situación' (1861), and 'Los bandidos de Río Frío' (1888). Luis G. Inclán's 'Astucia' (1865), which, while similar to Payno's

last novel in subject, does not compare with it in artistry.

At the end of the Wars of Reform and Intervention Mexico enjoyed a literary renaissance. Ignacio M. Altamirano (1834-93), through his *Recetas literarias* (1868) and his excellent novels, 'Lemencia' (1869), 'La navidad en las montañas' (1870), and 'El Zarco' (1888), by precept and practice, encouraged and schooled the artistic efforts of a large group of enthusiastic young writers, including Justo Sierra, the son, Ángel de Campo, and José de Cuéllar (1830-94). The latter wrote a series of novels of manners and morals under the general title, 'La Lámpara Mágica,' praiseworthy for their humor and precise portraiture. With Altamirano art had been added to romanticism.

Also after 1867 historical novels were produced in great numbers. Representative, if not the best of the group, 'Calvario y tabor' (1868), illustrates the degree to which historical description and violent action had replaced character creation. The author of this novel, Gen. Vicente Riva Palacio (1832-96) achieved contemporary fame, but his war novels are now almost forgotten.

By the end of the century romanticism had died out, while realism in the historical novel and the novel of manners strengthened its influence. Four excellent novelists, all realists, then came to the fore. Emilio Rabasa's fame rests on a series of four novels (1887-88) which trace the career of a typical small-town politician. José López-Portillo y Rojas (1850-1923) painted ranch life in vivid colors in 'La parcela' (1898), described subjectively the rise of a talented artist in 'Los precursores' (1909), and examined the question of land distribution in 'Fuertes y débiles' (1919). Rafael Delgado (1853-1914), a regional novelist, in 'Angelina' (1893), an imitation of Isaac's 'María,' gave Mexico its best romantic novel; then he turned to realism in 'La calandria' (1889-90) and in 'Los pacientes ricos' (1901-02). The trend toward naturalism, already apparent in Delgado's later novels, culminated in the novels of Federico Gamboa (1864-1939), whose most famous work, 'Santa' (1903), a Mexican 'Nana,' has long been Mexico's most popular novel. Gamboa, even though he depicted only the miseries of the lower classes, exposed conditions with the skill of a true reformer.

The novel fell into a state of decline after 1900, and only with the outbreak of revolution in 1910 did the energy to create realistic novels flow again in the veins of Mexican writers. Then began the great period of the novel which has not come to an end. The new novel, the 'novel of the revolution' as it is called, is characterized by freshness of view and freedom of expression. It deals with the history of the revolution, its origins, its growth, and its outcome. It is in turn pictorial, picturesque, picaresque. In its social problems, hitherto hidden by the paternal dictatorship of Díaz, are brought into focus for the first time. Two earlier novelists, Salvador Quevedo y Zubiate (1859-1936) and Heriberto Frías (1876-1928), pointed the way for novelists of the revolution by writing historical novels fraught with realistic descriptions and political implications. The latter's 'Tomóchic' (1892), the first novel of political protest, had considerable influence upon Mexican political thought.

The chief contemporary Mexican novelist, Mariano Azuela (1873), at the beginning of the civil war wrote the epic tale of a rebel leader, 'Los de abajo' (1915). Though he has since published many novels of social inquiry, none compares with this vivid picture of revolution. 'El cartucho' (1931) and 'Las manos de mamá' (1937), delicately lyrical, have placed Nellie Campobello (1912) in the front rank of Mexican novelists. The outstanding novel of political intrigue, 'El águila y la serpiente' (1928) came from the pen of Martín Luis Guzmán (1887), who is at work on an unusual fictional biography of Pancho Villa. Though Rafael Muñoz (1899) writes more exciting tales, Guzmán is unsurpassed in style and sensitive visual imagery. José Rubén Romero (1890), a robust humorist, cultivates in 'La vida inútil de Pito Pérez' (1938) and other novels a kind of writing peculiarly his own, the novel of rural Michoacán. Gregorio López y Fuentes (1897) describes in 'El indio' (1935) a primitive Indian village brutally overrun by agents of civilization. Most of his novels deal with the customs of his native Veracruz. Out of the sixty or more novelists using the Mexican revolution as a theme or as a starting point for novels of social inquiry, customs, and political dogma, only a few have given up their traditional independence to join either the school of proletarian writers or that of the *estridentistas*. The former is headed by José Mancisor, and the latter by Xavier Icaza (1892), an exponent of cacophonous prose. Two splendid books, one of customs, one of character study, have recently appeared: 'Nayar' (1941), written by Miguel A. Menéndez, and 'El paseo de mentiras' (1940), a collection by Juan de la Cabada.

The majority of the novelists of the revolution have ceased to picture the chaos of war and now have concentrated their attention on social changes which it brought in its wake. It is quite likely that they will contribute other splendid novels to modern Mexican literature for which they have already won esteem in the Americas.

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**16A. MUSIC.** Under the Aztecs, before the coming of the Spaniards, music held a primary place in the national life. The Aztec Empire was almost a theocracy in which native priests occupied the positions of greatest power, and there was hardly a single social phenomenon not intimately associated with religious expression. Prayers for rain to help the crops or for victory in battle, ceremonies of thanksgiving, *fiestas* of offering, dances held in honor of a certain god, all of these were sponsored by native priests and all were occasions for group music in which the feelings of the entire folk found expression. Only two classes in the Aztec Empire were supported by the state, the priests and the warriors, and both of these were given a rigorous musical education. Dancing was frequently a part of folk ceremonies and Mexican dancers were trained under a discipline which was demanding in the extreme. These fundamental expressions of the Mexican people continue to take place even today in the countless *estilos* of city and countryside, and in the Indian communities they have maintained much of their indigenous flavor. They have been altered with the passage of centuries, but never destroyed.

Juan de Torquemada (1723) described one of these ancient folk festivals in great detail. It took place in an outlying district which had not come under the influence of the Spaniards, and no Spanish musical instruments were used. First of all, and early in the morning of the *fiesta* day, a huge straw mat was put in the center of the plaza, and on this the instruments were placed. The musicians then robed themselves in a nearby house of some native noble or elder, and came out dancing and singing. As they reached their instruments, a few Indians blew the signal on shrill whistles and the orchestra sounded off in a low tone. Its volume gradually increased as more and more people joined the dance. The slow, deep tones used at the beginning of the ceremony were quickened, two leaders started singing, and the chorus of several hundred townspeople soon joined them. The songs were chanted, and as the music and dance progressed they became higher and higher in pitch and faster and faster in rhythm. Young boys singing in falsetto voices added a note of variety to the harmony. The instruments at the beginning of the dance were limited to two drums, a large one called the *fluchuetl* which was played with the hands, and a smaller one called the *Tepozastli* on which sticks were used. Later on in the score other native instruments took up the chant: clay flutes, small trumpets, numerous bone whistles, and other types of drums. As Carlos Chaves points out, the ani-

mation, force, and rhythmic impetus of this native music gave it a vital dominant quality unexcelled elsewhere in the world. It was a type of music which completely dominated its hearers, and the purpose of which was to overwhelm forces of the supernatural world as well with its energy and its insistence. It did not entreat or supplicate, and all of its instruments were of a strong active nature, vigorous, sternal, persistent.

With the Spanish conquest a new horizon was opened to Mexican music. Just as the Spanish language imposed itself on the literate and literary people of Mexico, so did Spanish music and Spanish instruments impose themselves on the indigenous music of the Aztecs. This fusion of two races which resulted in the hybrid mestizo Mexican also resulted in a mestizo music which had to express itself in a new idiom. Native characteristics persisted, of course, but the cultural idiom of the conquering race now dominated the harmony, the rhythm, the direction, the instrumentation.

Only three years after Cortés captured Mexico City (1521), a Franciscan friar from Flanders by the name of Pedro de Cante had established his school for the natives at Texcoco in 1524. Here about 1,000 Indians were trained in music, singing, arts and crafts, reading and writing, Christianity. They were also taught how to make the new Spanish instruments, and soon became as adept as their Spanish teachers in this work. They made organs, guitars of all varieties and sizes called *guitarones*, *vihuelas*, *mariaichis*, *guitarras*, etc., and also the *chirimía*, a double reed instrument probably from Asturias in northern Spain, which resembles the bagpipe or Roman *gaita*. The instrument was derived from the ancient Greek flutes or pipes of Pan. *Vihuelas de arco* (played with a bow) were also introduced by the Spaniards. Pedro de Cante moved his school to Mexico City in 1527 and continued as its director until his death in 1572.

The first book of music printed in America was the 'Ordinarium' (Ordinary of the Mass) printed in Mexico in 1536. A total of seven music books appeared in Mexico before the year 1600. Our own 'Bay Psalm Book' (first book printed in the United States) came out in 1640 but music was not added until 1690. The 'Psalmodia Christiana,' a group of hymns and psalms translated into the native Mexican language by Bernardino de Sahagún, was printed in Mexico City in 1583. Many books of Spanish music, especially those of the great religious composers, were imported from Spain in the 16th and 17th centuries. Spanish hymns of the Virgin which do not greatly resemble the austere and often doleful hymns of Puritan Protestantism later became the basis (musically speaking) of most of the Latin American national anthems of the early 19th century when the struggle for independence took place.

One of the most important forms of mestizo folk music in Mexico was the *corrido* or ballad. The term *corrido* is Andalusian and the ballad itself is modeled on the *romance* of Spain, using assonance instead of rhyme. Mexican *corridos* tell stories of everything under the sun: revolutionary exploits, the first locomotive, the new town school, the love affairs of some ruffian or hero, in a word, anything in the public eye. The harmony is simple and seldom departs from the tonic, dominant, or subdominant chords. Accom-



paniment is on the guitar. One Mexican folklorist has enumerated 33 different kinds of *corridos*, and there are probably more. Old singers, especially beggars, sometimes know hundreds.

Other forms of Mexican folk music are the *zandunga*, a slow, sentimental song and dance from the Isthmus of Tehuantepec (Oaxaca), the *jarabe* or *jarabe tapatio*, such as the «Mexican hat dance» or the «dance around the bottle» which recall the Spanish *seguidilla*, *fandango*, and *jota*, the *jarana* of Yucatán with much heel-work and playing at bullfighting; the *huapango*, especially popular in the state of Vera Cruz, also with much use of the heels and of strong Andalusian rhythm *Huapangos* are danced on wooden platforms like the ancient Aztec *mitotes*, to which they bear some resemblance. Other songs and dances are the *alabado* or «song of praise» the dreamy *canarios* of Michoacán, the lively *chapanecas* with its hand-clapping, songs of the Revolution like *la cucaracha* and *la Adelita*, and many others. In some parts of Mexico (Michoacán, Jalisco, etc.) stringed instruments such as harps, violins, guitars, and *vihuelas* known as *marachas*, are used. But in Yucatán the *jarana* players use cornets, drums, and gourds. There is a folk orchestra at every Mexican railway station, and several at every *fiesta*, ready to play any one of dozens of selections for a few pennies.

In contemporary Mexican music by known composers three very distinct trends are outstanding: first, composition in the European tradition with only slight native influences which we find in the works of Manuel M. Ponce and José Rolón; second, the «nationalist» group which is inspired by native traditions but which composes in a highly personalized manner, as for example Carlos Chávez and Silvestre Revueltas; third, those «radicals» who greatly admire Arnold Schoenberg and the atonalist school. Among these the Mexican Julián Carrillo, who was trained by German teachers, has composed several pieces with intervals smaller than the semitone. Of the three groups the second or nationalist school is the most important. Under the direction of Chávez in 1931 the National Conservatory and the Department of Fine Arts of the Division of Public Education obtained enough native instruments to found the «Mexican Orchestra». This musical organization uses all of the instruments brought to Mexico from Europe by the Spaniards, as well as all those of the ancient Mexicans. Chávez points out that the presence of these Aztec instruments «gives such force to the ensemble that the other instruments are completely transformed.» In the actual work of composition Chávez has utilized many Aztec themes, and Revueltas has based many of his pieces on *corridos*. They have brought a new vigor to Mexican music, have re-established the pride in race and native culture which was for so long in eclipse, and have given to mestizo musical expression of the present day a fullness, depth, and richness which has already voiced itself in many fine symphonic pieces and which promises many more for the future.

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#### 17. HISTORY. Pre-Conquest Period.—

The history of Mexico divides itself into three parts. aboriginal Mexico under the domination of its native Indian rulers, from the border land of prehistoric times to 1521; Spanish occupation from 1521 to 1821 and independent Mexico from 1821 to the present.

A score of distinct aboriginal tongues and more than 100 dialects still spoken within the confines of the Mexican Republic are evidence of the presence of numerous races that overran the country at various periods during its prehistoric existence. These early races seem to have had considerable influence upon the traditions, mythology and customs of the people who followed them in the country. From the confused movement of the shadowy peoples of the past stand forth the forms of several more or less distinctly cultured races whose written and traditional records, legends and folklore reach back to the dim border land beyond which all is mythical. During the early semi-historical part of this period the great Nahua race, beginning its many years of wandering from the north, crossed the Mexican boundary in the 6th century and continued southward. These migrations were participated in by numerous tribes or nations. The first of these, the Toltecs, came from the semi-mythical land of Old Tlapallan under the leadership of their high priest and chief, Heumatzin, he of the big hands, and arrived at Tulancingo (a short distance north of Mexico City) in 720, after 176 years of wandering. Soon afterward they established populous centers at Tula, San Juan, Teotihuacán, Cholula and numerous other places and extended their power over a wide reach of country. They are said to have been a highly civilized race, to have been builders of great and handsome cities and to have extended organized commerce for hundreds of miles beyond their own territory which, at the height of their power and prosperity, stretched from the Gulf of Mexico to the Pacific and far southward to the border of the domains of the Maya of Yucatán, Chiapas and Campeche. They had a settled form of government and

complicated, far-reaching codes of law which included military, political, social and religious regulations, and these, in their turn, were supported by racial customs and dogmas. See MEXICO — MYTHOLOGY, MEXICO — LITERATURE.

While the Nahuatl held the central portion of what is modern Mexico, the Maya and other kindred races occupied the south, stretching from Campeche, Yucatan and Chiapas south and west to the Pacific and into Guatemala, where they established a civilization rivaling that of the Toltecs. Between the Maya on the south and the Toltecs on the north lay the Zapoteca and the Mixteca, almost as far advanced as they in the arts and sciences and the principles of government. All four peoples were skilled workers in metals and excellent makers of pottery and woven fabrics. They recorded their histories, traditions, religious formulas, tribute rolls and important events in complicated hieroglyphics which varied with the different races. They were good agriculturists, excellent builders and organizers and they maintained extensive and well apportioned armies and systems of public instruction. All education was in the hands of the priests and administered from the temples, thousands of which, rising from high, truncated, pyramidal structures, covered the land. These temples were specially numerous and of notable magnificence in the Aztec land and Yucatan. See MEXICO — ARCHITECTURE, MEXICO — ART.

Civil wars, internal dissensions, famine and plague are given as the causes of the disruption of the Toltec empire which came to an end in 1116, after nearly 400 years of existence. A part of the Toltec population is said to have migrated southward and to have entered the land of the Maya. It is certain, however, that many remained behind and lost their identity in the Chichimeca and other less cultured races who occupied the valley of Mexico and surrounding country. From this union sprang the famous Texcocans, whose capital, Texcoco, on the lake of the same name, preserved the civilization of the early Nahuatl and finally became the most noted centre of culture in the Mexican empire.

The Aztecs, Texcocans, Tepanecas, Chalcos and Tlaxcalans are the most notable of the Nahuatl tribes who took possession of the country deserted by the Toltecs. Of these the most important are the Aztecs, who began their wanderings from Aztlan, their old home in the north, about a century after the Toltecs. Six hundred years later they arrived in the valley of Mexico, where they eventually, after many struggles and privations, established themselves on two little islands in Lake Texcoco, and founded their capital, Tenochtitlan, the Place of Tenoch, their priestly leader and mighty warrior, or Mexico, the Place of Mexitli, their war god.

The Aztecs prospered, grew in numbers and extended their power over the Chalcos and other tribes bordering on the lakes of the valley of Mexico and, forming an alliance with the Texcocans and the Tepanecas, carried their conquering arms from the Gulf of Mexico to the Pacific and, from some distance north of Mexico City, southward past the Isthmus of Tehuantepec almost to the border of modern Guatemala, where they encroached upon the land of the Maya. The creation of this vast

empire which, in extent and power, outruined that of the Toltecs, was due to the skill, intelligence, executive ability and warlike prowess of a line of kings which began with Acamapitzin, Prince of the Reeds (1370-1401), 50 years after the founding of Tenochtitlan. The other Aztec rulers in succession, up to the arrival of Cortés, were Huitzilihuitl, Hummingbird's Feathers (1401-17), Chimalpopoca, Smoking Shield (1417-27), Ixcóatl, Obsidian Knife (1427-40), Moctezuma I, Wrathful Chief (1440-69), Axayacatl, The Fly (1469-81), Tizoc, Lame Leg (1481-86), Ahuizotl, Water-rat (1486-1502) and Moctezuma II (1502-20), all of whom worked zealously for the upbuilding of the Aztec empire and the beautifying and extension of their capital.

From the beginning of the reign of Moctezuma II, Spanish navigators had been exploring the neighborhood of the Mexican coast and several had touched on the mainland of Yucatan and Campeche. In 1492 Hernán Cortés, inspired by the dream of conquering a great and rich land, of which reports had been brought to Cuba, set out with a small military force on his daring expedition to the uplands of Mexico. On the way he defeated the Tlaxcalans, an independent nation, and the Cholulans, who formed a semi-dependent province of the Aztec empire. From these he recruited a considerable native army, with which he continued his march to Mexico City, where he was reluctantly received by Moctezuma II and quartered in one of the royal palaces. He finally succeeded in making a prisoner of the Aztec ruler, who was killed a short time afterward (30 June 1520) either by the Spaniards or by the Mexicans themselves. The presence of the Spaniards in the city, the death of the emperor and the profanation of the shrines of their deities enraged the Aztecs to such an extent that they rose against Cortés and he was forced to leave the city by night. In the retreat he lost his cavalry, artillery and most of his infantry. After recruiting a new army and obtaining additional war equipment, Cortés returned and laid siege to the City of Mexico which he captured (13 Aug. 1521) and afterward continued the conquest of the domains of the Moctezumas.

**Under Spanish Rule.** Immediately after the surrender of Tenochtitlan the government of Mexico fell into the hands of the conquistadores who, being purely military governors, administered the affairs of the land by means of military law. Gradually the large cities were granted local government similar to that of Spain and the province was divided into districts controlled by the central government in Mexico City. In 1538 auditors (*oidores*) were introduced to keep a check on the captain general, Cortés. They soon succeeded him and continued to govern the country until 1535, when Antonio de Mendoza became the first viceroy. He was a very earnest and capable man and at once proceeded to replace with an orderly and settled form of government the haphazard methods of the *oidores* and military leaders.

Spain monopolized the trade of Mexico, or "New Spain." Commerce to and from the colony could be carried only in Spanish bottoms; nothing was permitted to be grown in Mexico that might in any way come into com-



petition with products from Spain. Only native-born Spaniards could hold office under the government in New Spain. The establishment of manufactures of all kinds was discouraged or prohibited. Yet Spain gave her colonies a strong government and one that was thoroughly understood by the mass of Indians and mestizos who composed the greater part of the population of Mexico, for it was much like the kind they had been accustomed to for centuries under their native rulers. The encouragement of literature and art, the beautifying of the cities and towns, the extension of great highways of commerce, the improvement of harbors, the establishment of high schools, colleges and a provincial university and the practical eradication of the native religion with its human sacrifices were far-reaching benefits which Spain bestowed upon Mexico. But the evils of her administration outlasted the good. The establishment of penance and the concentration of the Indians in centres, towns, camps or ranches under the pretense of civilizing and Christianizing them soon destroyed all the machinery of the native civilization. The masses of the population, their aboriginal laws and codes of morality gone by the board, soon lost their pride of race and descended to a condition of slavery bringing with it debauchery, a loss of interest in life and a consequent loss of ambition. These and scores of other abuses created discontent throughout the viceroyalty, which was destined to show itself in vigorous protests and insurrection against Spanish authority. An unsuccessful revolutionary plot in the capital in 1808 was followed by the uprising of Hidalgo, the patriot priest of Dolores, on 16 Sept. 1810. Hidalgo, after a wonderfully successful initial campaign which brought him, with an army of 100,000, almost to the gates of the capital, was finally defeated, captured and executed the following year. The war of liberation dragged on with varying success until 1821, when the life of independent Mexico began.

**Independent Mexico.**—The first government of independent Mexico consisted of a council of six, with Gen Agustín Iturbide, the commander of the revolutionary army, as president. On 19 May 1822 Iturbide was proclaimed emperor, and on 21 July he and his wife were crowned in the cathedral of the capital. But dissensions soon set in and Iturbide was forced to abdicate and to leave the country. On returning to Mexico in 1824 he was arrested, tried and shot as a traitor. Then followed many kaleidoscopic political changes in which the personal ambition of military leaders played the foremost part.

Santa Anna, who became President in 1833, and who was looked upon as a good soldier, took the field against the Texas revolutionists with an army of 6,000 trained men. Successful at first, he was defeated in 1836, captured and taken to the United States, but was allowed to return to Mexico the following year. For more than a generation, from the first days of the republic to the middle of the 19th century, the figure of Santa Anna appears ever in the foreground of the political life of Mexico guiding the destinies of the nation or watching political moves from either voluntary or forced retirement. Shortly after his return from the United States the French government sent a

squadron to Vera Cruz to enforce the payment of claims against Mexico held by French citizens. Santa Anna, who had gone into one of his periodical retirements, came forth and placed himself at the head of a force to oppose the French, who finally withdrew. Santa Anna claimed the honor of having driven them from the country. This claim and the fact that he lost a leg in the encounter made him once more a national figure and a popular hero, although Mexico had been forced to comply with the French demands.

Bustamante, recalled from exile, became President in 1837, on the outbreak of the revolution in Texas. The struggle between ambitious military leaders became more intense. Santa Anna, Paredes, Bustamante, Fariás, Herrera, Nicolás Bravo and others played their several parts on the constantly changing stage. The admission of Texas to the American Union as a State, 29 Dec. 1845, roused the resentment of Mexico against the United States to a high pitch. James K. Polk, who succeeded Tyler as President of the United States, was an ardent expansionist and included in his plan of expansion the acquisition of California, Arizona and New Mexico, then Mexican territory. Claims amounting to several million dollars were held by American citizens against the Mexican government, which was unable to meet them. Polk proposed to settle these claims in exchange for Mexican territory, paying, in addition, to Mexico \$25,000,000 in cash. In November 1845, John Slidell was sent as diplomatic representative to Mexico City, with instructions to press the matter of cession of Mexican territory to the United States. But the Mexican authorities, having learned in advance of Slidell's commission, did not receive him. Polk was ready to ask Congress to declare war against Mexico in May 1846 when the news reached Washington that armed Mexicans had already crossed the border and killed a number of Americans. War was declared against Mexico, 13 May. General Taylor, in command of American forces on the Rio Grande, was ordered into Mexico. In September 1846 he defeated a Mexican army and captured Monterey and, on 22 February, he fought a drawn battle at Buena Vista (Angostura). A month later Gen Winfield Scott arrived at Vera Cruz, which he captured, 29 March, and began the long and toilsome march toward the upland plateau and the capital of Mexico, which he reached six months later. After the capture of Molino del Rey, Churubusco and Chapultepec, fortresses defending the capital, Scott's army entered the City of Mexico. In the meantime American forces had taken possession of California and New Mexico without opposition. In February 1847 a treaty was signed at Guadalupe Hidalgo, near the Mexican capital, between representatives of Mexico and the United States by the provisions of which California and New Mexico were ceded to the United States.

Santa Anna, who had again become dictator of Mexico while the country was at war with the United States, retired to Jalapa, and General Herrera became President, 3 June 1848. He was succeeded (January 1851) by General Arista, who was forced out of office by Santa Anna.

A new constitution for the republic which

became law on 5 Feb. 1857 figured in every Mexican conflict during more than half a century. President Comonfort repudiated it, thus estranging his own following without gaining the support of his opponents. He was forced to flee the country, and his departure gave rise to internal discussions not finally settled for years. Benito Juárez, president of the Supreme Court, claimed the presidency in accordance with the provisions of the Constitution. War divided the people and devastated the land and the reactionary party forced Juárez from the capital. In the midst of all this civil trouble, a real danger threatened the republic from without. In 1861 England, France and Spain entered into an agreement known as the Treaty of London, by which they were to send a three-fold fleet to Vera Cruz to demand of Mexico guarantees for the payment of her foreign debt and for the safety of their subjects in Mexican territory. This fleet, which appeared at Vera Cruz on 8 Dec. 1861, captured the port and proceeded to Orizaba, where a conference was held with Juárez, who agreed to comply with the demands of the powers. England and Spain at once withdrew their troops from the country. But the French, who had a secret understanding with the Mexican reactionary party, at the head of whom was Miramón, who had disputed the presidency with Juárez, remained in Mexico with the avowed purpose of settling its social and political difficulties. The French army soon began its march toward the uplands, but it was defeated before the walls of Puebla and forced to retreat to Orizaba (1862).

The Archduke, Maximilian of Austria, and his consort, who had been selected by Napoleon III as emperor and empress of Mexico, arrived in Vera Cruz 24 May 1864. In the capital they were welcomed and crowned with great ceremony. The protest of the United States forced the withdrawal of French troops from Mexico, and Maximilian, left to his fate, was compelled to surrender at Querétaro in 1867. He was tried, found guilty of treason to the Mexican people and shot on the Hill of the Bells near Querétaro, together with his two generals, Miramón and Mejía, 19 June 1867. The concerted action of the Army of the North under Escobedo and the Army of the East under Porfirio Díaz defeated the Imperialists; Mexico City surrendered to Díaz 21 June, two days after the execution of Maximilian; and on 15 July Juárez returned to the capital amid the rejoicing of the populace. But opposition to the Juárez government soon developed and his administration was troubled by constant uprisings and disaffection. Juárez died suddenly 19 July 1872, shortly after he had been re-elected President. He was succeeded by Sebastián Lerdo de Tejada, who served one term and was forced out of office shortly after his re-election by Gen. Porfirio Díaz who defeated the Lerdist party at the battle of Teocac, marched upon the capital and was there proclaimed provisional President, 24 Nov. 1876, and later constitutional President. At the expiration of his term of office, 30 Nov. 1880, he was succeeded by Gen. Manuel González, who continued the Díaz policy of encouraging the construction of railways and increasing the efficiency of the rural police charged with the

protection of the country from revolutionary and robber bands.

Díaz succeeded González in the winter of 1881, and, for more than a quarter of a century, he continued to be the one great power in Mexico. He found the country in debt and the income of the administration inadequate to meet the demands on it. He increased the revenue of the nation over 400 per cent; he built railways, highways, roads and harbors; he drained the valley of Mexico and made the pest-ridden coast towns places of resort. He encouraged foreigners to settle in or invest in the country and to contribute their part to his program of expansion and development, and he created a credit for the nation and steadily increased and improved it. He introduced system and encouraged honesty in the public service and prevented, to a very great extent, malversation of public funds, which had been so noticeable during previous administrations, by the introduction of a rigid and modern system of accounting and by holding the heads of the departments accountable for the funds passing through their hands. With Díaz the Indian and mestizo elements, constituting fully 85 per cent of the population, began to come into their own. Thus a new social life was created in Mexico under his régime, and in it the mestizo, for the first time, began to play a prominent part.

Díaz found public instruction neglected and practically non-existent and he set to work to remedy this defect. Training schools for teachers were established and the higher schools and colleges were increased and improved with a view to supplying, through them, the teaching body for new primary and secondary schools. Though lack of funds hampered this work, the results achieved bore fruit in the rapid increase of the standard of intelligence in the larger towns and cities. Under Díaz the resources of the country were developed; commerce threw off its provincialism and became national and international, and new industries sprang up throughout the land. But, with a government which had absolute control of the affairs of the country so long as that of Díaz, abuses were bound to creep in. About the President had grown up a strong personal party the members of which, while professing intense admiration for him and his government, succeeded in enriching themselves, their relatives and friends through concessions and privileges secured through their close connection with the administration. The spread of public instruction and the rise of the Indian and mestizo to public prominence introduced into the political equation a new and restless element which Díaz had constantly, throughout his long régime, to curb, control and discipline. The discontent increased; Mexican exiles in the United States used every means in their power to hasten the overthrow of the man they characterized as autocratic and tyrannical. Ramón Corral, the Vice-President, who was looked upon as the leader of the sinister influence at work in the party surrounding the President, was singled out as the special object of attack of the anti-government agents. Díaz, in the face of the impending storm, supported Corral who was re-elected in 1910. During the month of September 1910 the 100th anniversary of the declaration of Mexican independence was celebrated

throughout the republic with great pomp and ceremony and special representatives of foreign nations gathered in the capital to lend dignity to the occasion. But scarcely had the month of national rejoicing ended when political unrest began to show renewed activity. Francisco I. Madero, who had presented himself as a candidate for the presidency in opposition to Díaz and had been arrested on the charge of sedition and finally released from prison and ordered to leave the country after the elections had been held, furnished the necessary leader to the Liberals in the United States and their many sympathizers in Mexico. The active revolutionary propaganda already begun was intensified, and agents of the insurgent party spread their doctrines throughout Mexico and induced uprisings in Vera Cruz, Puebla, Chihuahua, Durango and other cities and towns of the republic; and, as Madero crossed the border to head the insurgents, similar outbreaks took place south of Mexico City, while revolutionary bands gathered in force in the north near Torreón, Gómez Palacio and Parral. The inauguration of Díaz as President (1 Dec. 1910) increased the revolutionary centres and quickened their activities, thus compelling the government to weaken its strength by distributing its forces over a large and constantly increasing area of territory. Radical changes were effected in the Díaz Cabinet and attempts were made to meet the demands of the revolutionists, as American troops were ordered concentrated along the Mexican border; for this move was taken in Mexico to mean a threat of intervention. The government offered to enter into peace negotiations with the insurgents, but attempts made to this end proved abortive and were suspended 6 May. Juárez fell to the insurgents 10 May, and Díaz, urged to save the country from further bloodshed and the danger of intervention, resigned, 25 May, and was succeeded in office by Francisco de la Barra, Secretary of Foreign Affairs, as President *ad interim* pending an election. Two weeks later Madero entered the capital where he was enthusiastically received. So powerful was his influence that the de la Barra administration was forced to consult him in every important move made. On 15 November Madero was unanimously elected President of Mexico; but scarcely had he assumed office when opposition began to develop and revolutionary intrigue to show itself within his own party. Zapata revolted in Morelos and Gen. Bernardo Reyes attempted an unsuccessful insurrection. Gen. Pascual Orozco, one of the foremost revolutionary leaders, rebelled and captured Juárez 12 Feb. 1912. Gen. Félix Díaz took Vera Cruz, but was himself captured, tried and condemned to be shot—a sentence which was commuted to confinement in the penitentiary near Mexico City. In the meantime Madero found himself unable to control those who surrounded him, to establish a stable government or to carry out the promised reforms.

General Mondragón, backed by his own troops and the students of the Military Training School at Tlalpam, a suburb of the capital, rose against the government, 9 Feb. 1913, marched to the military prison and set free General Reyes, and from there to the penitentiary and liberated Gen. Félix Díaz. Practically unopposed the three generals entered the

capital, where Reyes was killed in an attack on the National Palace. The revolutionists seized The Citadel, a strong fortress and ammunition depository, while the Madero forces took possession of the National Palace, Chapultepec and other points in and around the city. Both factions bombarded one another almost continuously for 10 days, when Gen. Victoriano Huerta, commander-in-chief of the government forces, brought the conflict to a dramatic close by the seizure of President Madero and Pino Suárez, the Vice-President, who were forced to resign their respective offices. Pedro Lascurain, Minister of Foreign Relations succeeded to the presidency. He appointed Huerta his minister of foreign relations and resigned in his favor. Thus, in one day Mexico had three Presidents. On the morning of 23 February Madero and Pino Suárez were murdered, presumably by agents of the Huerta government. For this act, Venustiano Carranza, governor of Coahuila, disavowed the new government and issued the Plan of Guadalupe which called for reforms in the administration, equitable taxation, extension of the educational system and the solution of the land problem (March 26). President Wilson dispatched John Lind to Mexico City as his personal representative with a view to bringing the opposing parties together; but Huerta's refusal to be eliminated as a presidential candidate and his arrest and imprisonment of 110 Congressional deputies and the forcible dissolution of Congress (10 and 11 October) made any compromise impossible. A new election held on 26 October, under pressure, resulted in the selection of Huerta as President. The new Congress, which met on 15 November, in view of a protest from Washington, declared void the election of the President and Vice-President but confirmed Huerta in the office of provisional President. The Constitutionalists determined to make no compromise with Huerta, and the war went on. Villa took Juárez 15 November, other important places fell and early in 1914 Villa captured Ojinaga, after the Federal garrison of 4,600 had retreated across the American border. Then turning southward he took Torreón in April, while Mazatlán and Tampico surrendered to the Constitutionalists in May, and Carranza set up his government in Saltillo.

Huerta found himself in constantly increasing difficulties on account of his defiance of the United States. These difficulties had culminated when sailors from the United States steamship *Dolphin* had been arrested in Tampico 10 April and marched through the city under armed guard. For this insult Admiral Mayo demanded that the Mexican government should order a salute to the American flag. This Huerta refused to concede; and President Wilson laid the matter before Congress 20 April, requesting authority to use the forces of the nation to enforce Mayo's demand. While Congress was debating this request American marines were forcibly landed in Vera Cruz to prevent the entrance at that port of a shipment of arms from the steamer *Ipiranga*. At this juncture Argentina, Brazil and Chile, known as the A. B. C. powers, offered to serve as mediators. The offer was accepted and the diplomatic representatives of these powers at Washington met at Niagara Falls, Canada, 20

May to 24 June, without being able to find a solution for the troubled conditions in Mexico. On the day they adjourned González took Zacatecas and, two weeks later, Obregón entered Guadalajara, and in July, San Luis Potosí, Manzanillo and several smaller places fell to the Constitutionalists. Huerta, forced to resign, 15 July, was succeeded by Francisco Carbajal, Minister of Foreign Relations, who at once entered into communication with the Constitutionalists and resigned in favor of Carranza, 13 August. Two days later Obregón took possession of the capital, where Carranza arrived on 20 Aug. 1914.

With the clamor of Huerta and the success of the Constitutionalists, bitter dissensions appeared in the heterogeneous elements composing the party. A convention of generals called to meet in Mexico City on 1 October served only to intensify the trouble and the convention was moved to Aguascalientes, where, dominated by Villa, it disallowed the claims of Carranza and elected General Gutiérrez provisional President. It was also decided to march upon Mexico City and compel Carranza to yield to the will of the Convention. In the face of this threatened danger, the latter went to Puebla and, from there, to Vera Cruz on the withdrawal of the American forces from Mexico 23 November. Zapata and Villa at once occupied the capital and Gutiérrez set up his government there (3 December). In January 1915 the Convention, disowning Gutiérrez, proceeded to govern Mexico City in its own name; but the approach of Obregón with a strong force compelled it to abandon the capital, which was occupied (28 January) by the Carranza commander, who, in turn, was forced to retreat before a Zapatista horde, 10 March. Two weeks later Villa recognized as convention provisional President Gen. Roque González Garza.

One of the dramatic incidents of the year was the siege of Naco, Sonora, by General Mayortena. Five Americans were killed and 50 or more wounded by shots coming across the border. Washington warned both the contending parties to refrain from firing into American territory. Early in January General Scott, representing the American government, and Villa held a conference at which it was agreed to withdraw the contending forces from Naco. In the meantime the Convention party was faring badly in the north. Guadalajara fell to Carranza and Villa was defeated at Celaya in March. Other disasters followed and finally Washington notified the Constitutional and Convention parties, 2 June, that unless peace was restored soon, the United States would be compelled to support some man or group of men capable of bringing order out of chaos. Meanwhile raids were being frequently made across the Texas border by bands from Mexico instigated from without Mexico by certain predatory interests, and finally, on the night of 9 March 1916, an armed band of Villistas attacked Columbus, N. M., killing eight soldiers and a number of civilians. Washington at once acted, 17 March, and sent into Mexico 12,000 troops under General Pershing with orders to take Villa dead or alive. Carranza refused a request from the American government for permission to ship, over the Northwestern Railway, supplies to Pershing's forces which were finally

compelled to come to a halt at Parral, where several American soldiers were killed and others wounded in a surprise attack.

In April General Scott, chief of staff, who had been sent to the Mexican border to report to Washington on the situation, held a conference with General Funston, commander of the American troops on the frontier, and General Obregón, Mexican Minister of War. The latter insisted on the withdrawal of the American punitive expedition from Mexico, and this was conditionally agreed to, 2 May. Carranza, charging the American government with bad faith and asserting that the presence of United States troops in Mexico proved a constant source of irritation and weakened the hands of the Mexican authorities, refused to ratify the agreement. Washington replied by reviewing the course of events in Mexico and charging that the Mexican government apparently did not wish to see the border raiders captured. On 18 June the American militia was ordered to the Mexican border two days after General Treviño had been enjoined by Carranza to prevent the movement of the Pershing expedition in any direction except homeward and to oppose the entrance of further American troops into Mexico. In pursuance of this order an American force of some 90 troopers was attacked at Carrizal and a number of officers and troopers killed and 12 taken prisoners. On a peremptory demand from Washington the latter were released, 27 June 1916. Carranza began to show a more friendly front, and proposed the naming of commissioners by the American and Mexican governments to consider the issue between them, 12 July. This proposition was accepted and Luis Cabrera, Minister of Finance, Ignacio Bonillas, Minister of Communications and Alberto Pam, head of the National Railways, representing Mexico, met in New London, Conn., with Franklin K. Lane, Secretary of the Interior, Judge George Gray and Dr. J. R. Mott. After many subjects had been discussed Carranza declined to approve any form of agreement, and finally the troops of the United States were withdrawn from Mexico without having accomplished any definite result.

A constituent assembly whose members were chosen at elections supervised by the Carranza army met at Querétaro. That assembly made radical changes in the constitution of 1857 which were promulgated on 5 Feb. 1917 and went into operation 1 May 1917. This provided for the democratization of the Judiciary, free justice without court costs, and created a labor code providing for a minimum wage, compulsory profit-sharing, a free employment bureau and protection against trusts. It also provided for confiscation by the government of churches, schools and hospitals in the possession of religious bodies; and that all clergy be native born. A congress was elected and began its sessions on 15 April 1917, on which occasion President Carranza declared that the nation would continue to be neutral in the European conflict. During the European War many Germans fled from the United States to Mexico, and these were accused of fomenting trouble for the Entente. General charges were made in the United States and in Britain, usually by capitalists interested in Mexican mines or their agents, that Mexico, notwith-

standing her proclaimed neutrality, was secretly encouraging the Germans. However, the connection of the Mexican government, if it ever existed, with this movement, has never been proved. From 1917 to 1919 there was friction between the Mexican government and the foreigners resident in the country over taxes and restrictions placed on mining and oil properties in the republic, both of which national assets the government rightly aims at nationalizing and protecting from exploitation by predatory foreign corporations. In 1916 the national currency was rehabilitated so as to give it a recognized and regular standard of valuation. In 1919 President Carranza issued a public statement that, in conformity with the provision of the constitution which prohibits re-election for second term of the chief official of the republic, he would not again be a presidential candidate. Civil war broke out again in May 1920. Carranza fled from the capital and was assassinated. Adolfo de la Huerta was made Provisional President. At the elections later in the year General Obregón was elected President. He enjoyed a comparatively peaceful term of office, with such revolutionary enterprises as were easily suppressed. Plutarco Elías Calles, who succeeded General Obregón as President, and served 1924-28, began his administration as a fervent reformer, and under him the Mexican educational system achieved perhaps its highest distinction, guided by the master hand of Moisés Sáenz, the nation's foremost educator. Calles, during the latter part of his term, however, went the way of many reformers and became a plutocrat of the first water, an owner of great plantations, factories, business houses, and allegedly of gambling dives of iniquitous reputation. After Calles there was a period of about six years during which the ex-President practically ran the country like a private business. He was accused of putting hand-picked appointees in the presidential chair with the greatest of ease. Portes Gil (1928-30), Ortiz Rubio (1930-32), and Abelardo Rodríguez (1932-34), were accused of having made the national government of Mexico the nation's most powerful vested interest. Portes Gil was charged with suppressing civil liberties with a hard hand; Ortiz Rubio was accused of fostering graft with a flaunting disregard for the national welfare; and Abelardo Rodríguez, one of Calles' former business associates, and reputed to be the wealthiest man in Mexico, was charged with persecuting the Catholics and all political opponents with considerable violence and bloodshed. As the nation reacted against this tumultuous régime which closely approached fascism, Calles was almost forced to support the candidacy of Lázaro Cárdenas in the 1934 elections. Cárdenas was neither an extreme leftist nor a «Calles man», and from 1934 to 1940 there ensued a period of fairly efficient and decent national government.

Soon after the election of Cárdenas, it was plain that he would not do the bidding of ex-President Calles, and the two abruptly split. Cárdenas established a coalition government of all the parties, and quickly won popular support. Former belief that the army was behind Calles was proved to be a myth, and the ex-President was unceremoniously placed on a plane and shipped off to the United States. Cárdenas then commenced his vast program of reforms. He

finished paying the Pan American Highway almost to the border of Guatemala, built hundreds of small schools in the outlying Indian districts, brought water and sanitation and medical care to nearly 500 communities which had formerly been without, expropriated the foreign-owned oil wells when their management refused to abide by Mexican labor laws, and restored civil liberties to all parties. Throughout his term the Fascist press of Mexico attacked him violently, but Cárdenas refused to answer with violence.

It is perhaps Cárdenas' proudest achievement that during his administration over 40,000,000 acres of land were expropriated from their wealthy owners and distributed to co-operative *ejido* groups. The owners were supposed to receive compensation but the perennially empty Mexican treasury seldom made more than token payments. At the end of Cárdenas' term of office in 1940, 50 per cent of all Mexican workers shared in the ownership of some land as contrasted with the 1910 figures at the end of the regime of Porfirio Díaz when less than 2 per cent of the population owned approximately 85 per cent of the land.

The election of Ávila Camacho in 1940 represented a change of policy which promised to carry the nation more toward the conservative side of the fence. Foreign capital was again invited to Mexico, and the President openly announced that he is a «believer» in the dogma of the Church. Under him the national government no longer closed churches, banned religious orders, proscribed Church education, drove priests from office, or harassed Catholics as it had sometimes done in the past. Under Calles persecution of the Church was the openly avowed policy of the government, under Lázaro Cárdenas restrictions were gradually lifted, and under Ávila Camacho this lifting of oppressive restrictions continued. Priests now go about their work unmolested. However, the Church is still prohibited from owning real estate, and the number of priests is still strictly limited by Mexican law (1 to every 45,000 inhabitants). Nevertheless, the Archbishop of Mexico City called on all Catholics to support President Camacho and there began an era of religious peace.

After 1920 the Mexican attitude toward labor changed completely. The Mexican Revolution of 1910-17 was the only Latin American revolution which resulted in a complete change in the ruling class. Other revolutions changed one political party for another, but in the Mexican Revolution the «underdogs» or *los de abajo*, as they were called in Spanish: the Indians, the mestizos, the peones, the laborers of all kinds, in a word, the dispossessed masses in general—overthrew the landowning class, took their property, and established themselves in power. The constitution of 1917, not always followed but one of the most liberal documents ever written, guarantees labor equal rights with capital, makes collective bargaining mandatory, prescribes conditions of work, minimum hours and wages, proper insurance, and workers' compensations of many kinds. In case of a labor disagreement the government itself closes the business institution or factory involved and keeps it closed until a settlement has been reached. As President Cárdenas once remarked, «The government is the arbiter and regulator of social life.» As a result of labor's sudden and almost meteoric

rise to power there have been periods of considerable racketeering. During the Calles regime under Luis Morones and his CROM, labor was dictatorial and violent. Under Lombardo Toledano's CTM (Confederation of Mexican Workers) during the regime of Lázaro Cárdenas, labor excesses were curbed, and under Ávila Camacho, elected in 1940, there was a further swing toward the right.

During the decade 1930-40 Mexican international relations became increasingly important, and at the Pan American congresses of Montevideo (1933), Buenos Aires (1936), and Lima (1938), the Caribbean nations followed Mexico's lead on many points. During the Sandino rebellion in Nicaragua (1926-28) against United States investors and marines, Mexico sent munitions and food to the Sandino side and did much to foster the idea that he was a great 'patriot' and leader of his people. This foray into Central America cost the United States over \$5,000,000 and the lives of 135 men out of 5,821 sent to the Central American republic.

Mexico proclaimed the policy of recognizing any government on a *de facto* basis as soon as it came to power, and thus attempted to urge the United States in the direction of absolute nonintervention in Latin American affairs for whatever reason. This policy was accepted by the United States at the Pan American Congress of Buenos Aires in 1936.

During the Spanish Civil War (1936-38) Mexico was the only Latin American country to openly espouse the cause of the Loyalists against Franco, and she offered refuge to many thousands of escaped Loyalists after the war was over. Many of these people had been intellectual and cultural leaders in Spain and so added substantially to Mexican culture.

In 1939 President Cárdenas vigorously announced his support of the Allied cause against Germany, and under Ávila Camacho in December 1941 Mexico immediately followed the United States' declaration of war by severing diplomatic relations with the Axis powers.

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## 18. DIPLOMATIC RELATIONS OF THE UNITED STATES WITH MEXICO.

Early relations were largely determined first by the Mississippi question and later by the failure to define the western limits of Louisiana in the treaty of 1803 and consequent friction with Spain after 1805.

The American government viewed with sympathy the Mexican revolutions, beginning in 1810, and later accorded belligerent rights to the revolutionary government which was aided by filibustering expeditions from the United States; but it endeavored to maintain neutrality until 1822 when, after the final ratification of the Florida Treaty with Spain, it recognized Mexico as an independent state whose government promptly opened Texas to American immigration.

At the close of 1822 José M. Zozaya was accredited first Mexican Minister at Washington, but the real beginning of the Mexican legation dates from the arrival of Pablo Obregon in November 1824. In March 1825, the American government sent Joel R. Poinsett as Minister to Mexico to recover the prestige lost by delay, but his methods aroused increasing distrust and suspicion which postponed the completion of treaty negotiations and finally led to his recall. After successfully opposing the plans of Mexico to unite with Colombia for the liberation of Cuba, he negotiated a Treaty of Commerce of July 1826 and another treaty of February 1828, both of which failed in the Mexican Congress after ratification by the American Senate. He hastily concluded a Boundary Treaty of January 1828 which was lost by delay in the Mexican Congress, but was revived in 1832 and ratified following the ratification of the new Treaty of Amity and Commerce negotiated in April 1831 by Anthony Butler, the successor to Poinsett.

Meantime there arose new sources of friction which produced strained relations after 1829, temporary severance of relations in 1836 and finally (a decade later) resulted in war. In Texas, which the United States unsuccessfully attempted to purchase in 1825, 1827 and 1829, internal troubles arising from differences between the Mexican government and the American colonists, and increasing after the Mexican attempt to prohibit American immigration in 1829 and the Mexican establishment of military posts in 1831, finally resulted in a successful revolution of 1835, in which many Americans participated and also in the American recognition (in 1837) of Texan independence—which, together with other grievances, aroused the hostility of Mexico. Relations temporarily severed in 1836 were again seriously threatened in 1837 by the withdrawal of the Mexican Minister who was not replaced by a successor at Washington until 1842. In 1835 President Jackson, renewing proposals to Mexico for purchase of Texas, authorized ne-



negotiations for a boundary on the parallel of 37° westward from the Rio Grande to the Pacific, but in 1837 he declined Texan offers of annexation.

Relations were also endangered by American claims (against Mexico) which in 1837 brought the American government to the verge of reprisals by force. Attempts at adjustment were made by the Convention of 1838 which was not ratified by the American government, and by another Convention which was ratified by both parties in April 1839 and made effective by acts of Congress approved on 12 June 1840 and on 1 Sept. 1841. These claims, allowed by a commission under the Convention of 1839 and a later Convention of 1843, were only partially paid, and later negotiations for another Convention were prevented by war.

Following the American annexation of Texas by joint resolution in March 1845 (after failure of the Senate to ratify an American-Texan Treaty of Annexation), Mexico again severed relations and later refused to receive John S. Shidell whom President Polk sent to Mexico to re-establish relations and to negotiate for adjustment of claims and for the annexation of California which was the chief aim of his Mexican policy. Finally, in the rich pasture lands of the border territory in dispute between the Rio Grande and the Nueces, the clash of rival military forces precipitated war, recognized as existing by declaration of the American Congress in May 1846.

Peace negotiations following the war were begun by the American government in April 1847 after important victories at Buena Vista and Vera Cruz. Nicholas P. Trist was sent as confidential agent with instructions similar to those of Shidell and with full powers to conclude a treaty of peace at a propitious moment. In November 1847, however, he received instructions to return. Unexpectedly detained, he finally determined to remain, and without the authority of his government, he negotiated the Treaty of Guadalupe Hidalgo of 2 Feb. 1848, by which the Mexican government ceded New Mexico and Upper California for \$15,000,000 and the American assumption of all American claims against Mexico. This treaty, including all Polk's *sine qua non* except the right of transit over Tehuantepec (which had become less important by the recent acquisition of rights over a better route by the Treaty with New Granada), on its arrival at Washington was hastily accepted by Polk, who, although he refused to pay the salary of the «impudent» clerk, was anxious for peace.

For over a quarter-century after 1848, relations were disturbed by border turbulence, filibustering expeditions, Mexican internal troubles, questions of new claims and of protection of transit routes and apprehension of European designs or of foreign intervention.

In compliance with a demand for additional territory, James Gadsden concluded with Mexico a Treaty of 30 Dec 1853, by which the United States for \$10,000,000 obtained south of the Gila River a strip of territory including the Mesilla Valley, and also a right of transit across the Isthmus of Tehuantepec where conflicting interests complicated later negotiations and relations.

The Mexican problem, which thrice had been adjusted by change of boundaries, still persisted after the Gadsden Purchase. Complicated with

Southern interests, and largely under the influence of Southern statesmen, the remedy most persistently proposed for its solution, in connection with an American transit route across Mexico, was an additional reduction of Mexican territory by a new cession to the United States, or, if that should fail, the establishment of an American protectorate which was expected in time to result in new annexations to the stronger country. The problem, only partially solved by the Pierce administration, was inherited by the Buchanan administration, which continued to negotiate—first, for the acquisition of additional Mexican territory and territorial concession as long as there was any hope of success, and later for territorial concessions and alliance and direct intervention (to enforce treaty stipulations) until the secession of the Southern States precipitated the beginning of the American Civil War and thereby increased the possibility and probability of the long-predicted intervention of European powers in Mexico, and exposed Mexican territory to the possible designs of Confederate filibusters.

The sequel to the story of persistent negotiations, which terminated in an unratified treaty, may be found in the Confederate policy to form an alliance with Mexico or to absorb it, the French policy of intervention in Mexico, and the American policy under Seward to prevent the execution of both Confederate and French policies and to preserve the integrity and independence of Mexico.

Through the entire period of the Civil War the American government consistently maintained cordial relations with the constitutional Juarez government. In 1861 it obtained through Mr. Corwin a Treaty of Extradition of Criminals and Fugitives from Justice. To guard against the extinction of the Mexican Republic or the danger of European intervention, it authorized the negotiation of a treaty obligating the United States to pay the interest on the Mexican funded debt for five years and to take for security a mortgage or pledge on the public lands and mineral rights of northern Mexico (Lower California, Chihuahua, Sonora and Sinaloa). This plan, however, did not meet the approval of France and England and was also opposed at Washington by senators who feared it might result in annexation.

Against the French invasion and occupation of Mexico and the establishment of the Maximilian government, which was regarded inimical to republic institutions in America, the government at Washington promptly protested and issued discreet warnings. Later it demanded withdrawal of French forces from Mexico, resulting in the fall of Maximilian in 1867 and the restoration of the republican form of government.

The United States concluded with Mexico, in 1868, a naturalization convention regulating citizenship of emigrants and a claims commission convention for adjustment of mutual claims. Under the latter a commission was duly organized at Washington 31 July 1869. Its powers were extended by convention of 19 April 1871 and again by a convention of 27 Nov. 1872. A mutual arbitration provided by the treaty gave a balance of about \$4,250,000 to American citizens. The famous Pious Fund Case (qv), first presented for adjustment to the Mexican Claims Convention in 1870, became a source of a new difference which was

finally settled under a protocol of 1902 submitting it to the Permanent Court of The Hague.

For a decade after the withdrawal of the French, Mexico was disturbed by domestic contentions attended with serious border lawlessness which at times impaired good relations and gave rise to troublesome questions and difficulties reaching an acute stage after November 1876, when the constitutional order of Mexico, which the United States had continually recognized for 17 years (since 1859), was overthrown by the successful military revolution of Gen. Porfirio Díaz. The cattle raids from Tamaulipas on the Lower Rio Grande, which had caused trouble since 1848 and had become prominent in the remarkable incident known as the Cortina war in 1859-60, but had declined during the Civil War, were renewed at the close of the campaign against Maximilian, and culminated in the Corpus Christi Raid of 1875 which attracted the attention of the American government to the precarious position of Americans along the border. These raids and depredations were intimately connected with the collateral question of the condition of the free zone along the Mexican side of the Rio Grande and the subject of extradition. Meantime the American government continued a temporizing neglectful policy, but, in 1875, it sent additional troops to the border and finally on 1 June 1877, authorized Federal forces to cross the border in hot pursuit.

The dangerous breach in relations of amity was for a time widened by the delay of the American government under President Hayes to recognize the government of Díaz. Finally the American Minister (John W. Foster), who had advised against the withholding of recognition, received authority by which he promptly placed himself in official relations with the Díaz government on 11 April 1878, nearly a year after it had been recognized by the other powers. Meanwhile, in December 1877, the House of Representatives adopted resolutions looking toward a consideration of the best means of removing the existing and impending causes of difference and of confirming and enlarging commercial relations.

The friendly feeling manifested following recognition of Díaz was of brief duration. Negotiations, which encountered delays, were rendered more difficult by complications resulting from new revolutions and disorders. American forces again crossed the border in hot pursuit of marauders in the spring and summer of 1878. Díaz, induced by Mexican clamor, demanded the withdrawal of the American order for crossing the border. Thus the administration at Washington declined to do. By October 1878 the situation threatened to result in war. Finally, with the establishment of orderly conditions by co-operative action in 1879, the American government in 1880 withdrew the order for crossing the border.

At the same time by the steady growth of centralized power in Mexico, relations had become increasingly friendly. The danger from Mexican internal disorders had largely disappeared in 1880, when Díaz retired and acquiesced in the election of his lieutenant whom he succeeded by re-election four years later. Border conditions rapidly improved. A reciprocity treaty was signed in 1882 and troublesome questions of the «free zone» and extradition were considered in a friendly spirit. A

partial relief from the continuation of border lawlessness was sought in 1882 in the agreement (later renewed yearly for several years) providing for crossing the border by armed forces of either country in pursuit of Indians, and by a convention for the establishment of the international boundary by suitable commissions of survey.

Steady improvement in relations was also greatly aided by extension of railway communication to the frontier by 1881, and to the interior of Mexico by 1883-84, by American capital and also by connecting the telegraph systems of the two countries through the completion of a submarine cable in March 1881. The establishment and multiplication of international railway communications, revolutionizing commercial conditions, largely supplanted the need of reciprocity treaties which, although negotiated in 1882 and 1891, were defeated in the American Congress.

Relations continued to improve in mutual friendliness, although public opinion in Mexico was divided between a policy of isolation and a policy of closer intercourse and concessions for industrial enterprises. In pursuance of the latter policy, the Mexican government by 1889 modified the old Mexican land laws and gave to American citizens liberal railroad, mineral and other grants.

A better understanding followed the establishment of an international water boundary commission in 1889 and the remarking of the southwestern boundary westward from El Paso in 1891-96, as defined by the Treaty of 1848. An unsatisfactory effort was made in 1895 to remedy the abuse of the Mexican free zone by smugglers. In 1896 a copyright treaty was negotiated and in 1899 an extradition treaty (supplemented in 1902). In 1899, through the good offices of the United States, Mexico concluded with Guatemala an arbitration convention for settlement of a long standing boundary dispute. In 1900 the Mexican Congress appropriated \$30,000 for sufferer in the Galveston disaster.

The better understanding was indicated by the reference of the Tamaulipas-Pioma Fund controversy to arbitration by The Hague Court (1902), the adjustment of boundary difficulties arising from the shifting of the Rio Grande and Colorado rivers, the negotiation of a convention (of May 1906) for the equitable distribution of the waters of the Rio Grande for irrigation purposes and the negotiation of an arbitration treaty in 1908. It was especially illustrated by the American-Mexican co-operation in 1907 in plans tactfully initiated by the United States to maintain order in Central America.

The growing intimacy of relations during the long presidency of Díaz, indicated by many international agreements, culminated in a general treaty of arbitration and the meeting of Taft and Díaz in 1910.

Relations again became strained after 1911 in connection with the collapse of the Díaz government and by conditions of the Maderista revolution, both in Mexico and along the border, which were a source of much concern to the United States.

The American government under President Taft, although it mobilized troops on the frontier, declined to intervene and with difficulty



maintained neutrality—both before and after it recognized the new government of Madero, which was finally overthrown in February 1913 by Félix Díaz and General Huerta. In 1912 the rumor of Japanese plans to secure a harbor at Magdalena Bay caused the Senate to pass an opposing resolution which, however, was not accepted by President Taft.

Under President Wilson's new policy of using non-recognition as a means of discouraging the establishment of governments based on force and violence, the American government refused to recognize Huerta, unsuccessfully urged an early free election in Mexico, warned Americans to leave that country and vigorously demanded both the *de facto* government of Huerta and insurrectionists to respect lives and property of Americans.

In April 1911, after a series of irritations and insults it sought reparation by a naval and military force which occupied Vera Cruz, but, with certain restrictions, it promptly accepted friendly mediation of the A B C powers of South America (Argentina, Brazil and Chile) which in May 1911 considered plans for settlement of the internal and external difficulties of Mexico.

Finally, after the failure of an appeal (by a Latin American conference at Washington) to the rival factions to settle their differences, the American government, on 19 Oct. 1915, recognized the Carranza government as the *de facto* government of Mexico.

In March 1916 a new trouble arose from an attack of Villistas on the American town of Columbus, N. Mex., instigating the American government to send a punitive American force under General Pershing into Mexico in hot pursuit. Carranza protested and insisted upon withdrawal while the United States, refusing to recede from a settled determination to maintain its national right and its duty to remove the peril, called 150,000 militia to the border. The situation during a period of negotiations was complicated by a new raid of Mexican bandits into Texas. An encounter with Mexican troops, resulting in casualties on both sides and capture of 17 Americans as prisoners, threatened to produce a final crisis which was averted only by Mexican acquiescence in the American demand for immediate release of the prisoners. The strain of the situation continued until complications were solved by agreement upon a joint commission of six members, who, however, could not reach an acceptable plan of action. Early in 1917, the American government, after gradually withdrawing American troops, sent an ambassador to the Mexican government of Carranza under whose auspices preparations for better conditions were begun by the adoption of a new national Constitution.

Later relations were affected by conditions relating to the First World War. In February 1917 when the American government was becoming more determined in its resistance to Germany's piratical acts against American rights upon the seas, Mexico proposed to neutrals to invite the European belligerents to terminate the conflict, or, in case of failure, to reduce the conflagration by refusing any kind of implements and by suspending commercial relations. In reply the American government, declining the proposal, exposed a recently discovered plot of

the German government to induce Mexico to join with Japan in war against United States, the bribe offered being the territory ceded to United States in 1848. Mexico denied all complicity in the plot.

A crisis developed in 1926 with the United States over the Mexican petroleum and land laws. United States and Great Britain took the stand that foreign investors should be protected and enjoy equal rights with Mexicans. Arbitration was proposed, and President Calles indicated that, while he would arbitrate on the amount of compensation for foreign property, he could not arbitrate the question as to the right of Mexico to alter or revoke by legislation the titles to foreign-owned property. In January 1927 prominent Mexicans asserted that anti-Calles factions in Mexico would not accept any arbitration awards affecting the constitution.

When President Coolidge appointed Dwight Morrow as United States Ambassador to Mexico in 1927 it was the beginning of a Good Neighbor policy toward the Latin American republics which has continued to date. President Herbert Hoover further strengthened the sincerity of the United States attitude by recalling American marines from the Caribbean area, and President Franklin D. Roosevelt in 1933 dedicated the United States to the policy of the Good Neighbor in his inaugural address. This new harmony among the American nations has proceeded toward a high-water mark with very few setbacks. Dwight Morrow's successors in Mexico, J. Reuben Clark and Josephus Daniels, carried on the good work of their predecessor and backed to the fullest extent the ideal of national sovereignty of each Latin American state. At the Pan American Congress, held in Buenos Aires in 1936, this ideal was officially accepted by the United States when it was resolved and approved that in the future no American state would intervene in the affairs of another "directly or indirectly, and for whatever reason."

The only ripples on the smooth surface of Mexican-United States relations in the past 15 years or so developed in 1926–28 when Mexico backed the Nicaraguan Sandino against American investors and marines, and in 1938 when President Lázaro Cárdenas of Mexico expropriated all foreign-owned oil wells when their management refused to abide by Mexico's labor laws. About \$175,000,000 worth of these wells were owned by United States interests and about \$250,000,000 worth of them belong to British and Dutch investors. A storm of protest was raised in the United States by the oil companies, but the State Department sat tight. In 1941 an agreement was finally reached whereby the United States Export-Import Bank would lend the Mexican government funds, and Mexico would make substantial payments on properties expropriated. On 29 Jan 1942, the United States Senate ratified a treaty with Mexico providing for the adjustment and settlement of about 4,300 outstanding claims of nationals of each country against the government of the other. Under this treaty Mexico will pay the United States \$40,000,000 over a period of years.

In the Mexican elections of 1940 feeling ran high, but when Ávila Camacho defeated Almazán by odds which were so overwhelming as to appear incredible (Ávila Camacho 2,476,641 to Almazán's 151,000), Vice President Henry A. Wallace of the United States followed the Mex-

ican established principle of recognizing any government which came to power when he went to Mexico City for the Mexican inauguration.

Another point of Mexican-United States relations during the past several years has been the silver purchasing policy of the United States government. In order to maintain the price of silver in the United States, the federal government bought domestic silver at prices ranging from 60 cents to 71 1/2 cents an ounce, and foreign silver at prices ranging from 30 to 40 cents an ounce. This was of help to the Mexican mining industry and economy, for that nation produces about 10 per cent of the world's silver. Late in 1911 the United States agreed to pay Mexico 35 cents an ounce for 5,000,000 ounces of silver from month to month.

In 1940 when he was elected President, Ávila Camacho, who belongs to the center, announced his firm support of the democratic ideal and hemispheric unity. He even went so far as to invite the investment of foreign capital in his country. When Japan and the other Axis powers declared war on the United States in December 1941, Mexico immediately severed diplomatic relations with them. The Good Neighbor policy was proved to be as effective in reciprocal deed as it had been in word.

Mexican trade with the United States has also been on a cordial basis for the past several years. About 80 per cent of her imports in the year 1911 were from the United States, and about the same percentage of her exports went to the United States (84 per cent in January 1940). Ninety-eight per cent of the tourist travel in Mexico is North American, and in 1941 150,000 American tourists visited that country. Tourist travel is rapidly becoming Mexico's number one industry.

At the conference of Ministers of Foreign Affairs of American Republics held in Rio de Janeiro in January 1942, the Mexican Minister Ezequiel Padilla, perhaps more than any other Latin American figure, was responsible for obtaining group support of the United States. Rising to a high pitch of oratorical eloquence, Padilla pled for a new Magna Charta of "the free American," and urged a solid bloc of American nations against the Axis powers. The delegates rose to their feet and cheered for several minutes. No speech had stirred such spontaneous enthusiasm at any Pan American gathering for many years past, and Padilla's words contributed as much as any amount of material armament of which the United States might have boasted toward the success of the conference. At the conclusion of the gathering, Under Secretary of State Sumner Welles of the United States remarked: "For the first time in the history of our hemisphere, joint action of the highest political character has been taken by all the American nations." A few days later every Latin American nation except Argentina and Chile had broken off diplomatic relations with the Axis powers, and the economic resources of the entire hemisphere were marshaled in a giant pool for the United Nations. Latin American ports were opened to United States warships, airports were opened to United States planes, air-tight trade pacts assumed the United Nations of all Latin America's strategic raw materials, and a period of mutual trust and co-operative effort began for the 21 American republics. Nothing like that happened in 1914-18.

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**19. CULTURAL RELATIONS WITH THE UNITED STATES.** During the years 1920-42 cultural relations between Mexico and the United States became closer than at any time in the history of the two nations. There were periods of considerable economic friction, but in spite of this, only the slightest cultural animosity existed, and only the most one-track minded literary writers in either country belittled the other. Two rather violent episodes, however, did drag forth their quota of general denunciation from the other side of the fence. The first, Mexico's announced governmental policy of the years 1925-35, was the extreme anticlerical attitude of the Mexican revolutionary presidents. It caused Catholics in the United States to write strongly against this policy of the Mexican government, and argued that government itself. The other, North American ownership of oil properties and chicle interests in Mexico, evoked a veritable stream of so-called "revolutionary dramas" from the pens of Mexican writers in which the alleged hypocrisy, greed, cruelty, and materialism of United States capitalists was bitterly attacked. Juan Bustillo Oro and Mauricio Magdaleno wrote several of these dramatic tirades which were presented by the Leftist "Teatro de Ahora" in Mexico City. José Vasconcelos, a much better known writer than either of the above two, who was once Mexican Minister of Education under President Obregón, also wrote several essays with a strongly anti-United States tinge. His thesis, which was that of many Mexicans, was that United States Monroeism had become a purely unilateral policy which redounded only to the benefit of the great "Colossus of the North." On the other side of the scales Vasconcelos placed what he called the policy of *Bolivarianismo*, the Latin American ideal of Hispanic unity as announced by Simón Bolívar, a unity of the Ibero American nations of the New World to oppose the materialism of the north.

But it was not long before Mexico's strongly anti-Church policy was anchored, and finally abandoned completely, and the Good Neighbor policy of the United States soon brought about a reversal of the Mexican attitude toward the United States Department of State as the arch «big-stick» protector of American investments. Mexican students flooded North American universities, and American students attended the summer schools of the National University of Mexico in greatly increasing numbers. Mexican artists, writers, teachers, and business men were invited to the United States. The muralists Diego Rivera and José Clemente Orozco spent many years in the United States where they gave many lectures and painted some of their finest works. Municipal buildings, public centers, and many United States colleges were decorated with their highly pictorial and colorful frescoes. One of Rivera's murals was destroyed at Rockefeller Center in New York because of its «communist» note, but all other works of these two masters were enthusiastically received, and mural art in the United States underwent an almost complete rebirth after its intimate contact with them.

The Committee on Cultural Relations with Latin America in 1925 established an annual seminar of inter-American studies to be held in Mexico. Many outstanding Mexican teachers and writers took part in this program of advanced studies, and some of the finer essays produced in connection with these study groups were published in books which soon became the recognized authorities in matters of Mexican art, music, folk dances, economics, finance, literature, politics, and sociology. Hubert C. Herring, one of the world's outstanding Latin American scholars, served as editor of these groups of essays.

Another medium for the propagation of Mexican culture in all its phases in the United States is the excellent magazine *Mexican Life*, founded in 1924 by Howard S. Phillips. *Mexican Life* is published in Mexico but is written entirely in English, and some of the best available articles on Mexican culture have appeared in its pages. This journal also contains frequent reproductions of works of Mexican art, and many fine photographs.

In the purely literary field relations between the two countries were also greatly intensified. Besides the scholarly studies on Mexico by Ernest Gruening, Robert Redfield, Carleton Beals, Stuart Chase, Hubert Herring, and a host of other North Americans, many works on the United States were widely read in Mexico, and among the literary figures of the United States, Pearl Buck, Eugene O'Neill, Sinclair Lewis, John Steinbeck, John Dos Passos, Thornton Wilder, and a great many others appeared in excellent Spanish translations so that it was not long before they were almost as well known from Mexico to Argentina as they were in the United States.

Translations in English of works of Mexican literature have appeared in equally great numbers during the past few years. The famous poet Amado Nervo appears in several English versions, and Alice Stone Blackwell, G. Dundas Craig, and E. W. Underwood have made many other Mexican poets known in English translations. Among the novelists, Mariano Azuela, author of the famous 'Underdogs' or 'Los de

abajo,' has brought the Mexican Revolution graphically before the North American public. The English version of the 'Underdogs' appeared in 1929 and was illustrated with several fine drawings by José Clemente Orozco. 'Marcela,' another of Azuela's novels, which treats of the Díaz tyranny which was rampant just before the outbreak of the revolution, appeared in English in 1932. A third novel of the Mexican Revolution, 'The Eagle and the Serpent' by Martín Luis Guzmán, preceded it by two years. The Mexican prize novel, 'El indio,' of Gregorio López y Fuentes, came out in 1935 beautifully illustrated by Diego Rivera. Whereas Azuela and Guzmán had presented rather disconnected verbal «etchings in blood-acid» of the chaotic revolutionary years, and the cruel, blind swirl of the thwarted dispossessed lashing out in all directions and against all authority, López y Fuentes presents a symbolic and pathetic picture of Indian life in an isolated Mexican community. No proper name occurs in the novel, each person is a type, each incident is a symbol. The Indian boy crippled by greedy whites who invade his village in search of gold becomes a symbol of crippled Mexico whose bones have been crushed by white and mestizo greed driving the very life-blood from the exploited natives. A Mexican novel appearing in English in 1941 was the prize novel 'Nayar' by the well-known poet Miguel Ángel Menéndez. 'Nayar' presents the story of a mestizo who murders a local judge and has to flee his town to wander over Mexican swamps, jungles, mountains, and through many little villages until he finally takes up with an Indian community whose primitive spirit of justice he greatly admires. Nevertheless, his mestizo Spanish tutoring causes a deep cleavage in his feelings of loyalty, and when the Indians are about to kill a so-called sorcerer for having blighted their crops, the mestizo protagonist betrays them and brings in the federal police. 'Nayar,' thus, represents the conflict between two Mexican civilizations, one dying, or at least being absorbed, and the other achieving a dubious victory by way of organization and dominance. Two more famous works of Mexican literature, appearing in 1942, were the 'Periquillo Sarmiento,' of Fernández y Lizardi, first Latin American novel, and a colorful picture of Mexico on the verge of its struggle for independence against Spain, and the famous 'History of Mexican Literature' by Carlos González Peña.

In the musical field, too, Mexico has recently come to the fore in the United States. Carlos Chávez, director of the National Mexican Orchestra, in 1936-37 directed both the Boston and New York Philharmonic Symphony Orchestras in special invitation, and his symphonic pieces are now rather frequently played in the United States. Several of his excellent articles on music, particularly on Mexican music both ancient and modern, have been widely circulated in English translation. Chávez was enabled to carry on some of his purely artistic work as a composer and musicologist with the award of a North American Guggenheim Fellowship.

Another element which has contributed much to the growth of closer cultural relations between Mexico and the United States is the International Institute of Ibero-American Literature organized in Mexico City in 1938. The National University of Mexico foresaw the fundamental necessity of closer spiritual ties between the

Hispanic and the Nordic sectors of the hemisphere, and took the initiative in organizing this institute of literature. In 1910 the institute succeeded in obtaining invitations for several Latin American professors to give courses in the United States, and among these were some of the finest scholars of Mexico. The institute publishes the largest journal in the Latin American cultural field, the *Revista Iberoamericana*. This journal dedicated to the propagation of hemispheric culture is published in Mexico City, and is widely read throughout the Americas.

In the field of the motion picture, Hollywood and Mexico have frequently vied with each other in the production of fine films on the Mexican scene, and of course the majority of the motion pictures shown in Mexico are Hollywood products. A North American attempt to present the life of the revolutionary bandit Pancho Villa in 'Viva Villa' did not take so well in Mexico, but 'Juárez,' which portrayed that pre-Indian President as the Mexican Abraham Lincoln was very well received. In the meantime, Mexico sent many fine films to the United States. The famous Russian motion picture photographer Eisenstein traveled over that country for many months until he had amassed 150,000 feet of film (feature length 8,000 feet) on nearly all phases of Mexican life. The finest shots of this collection were released under the title 'Thunder Over Mexico,' and for pure pictorial effect they have never been equaled. A revision (1940) of this film called 'Time in the Sun' was made by Marie Seton, a British cinema critic. The Paul Strand film 'Las redes' (called in English 'The Waves'), was another supreme example of fine motion picture photography. Music for this picture was composed by the outstanding Mexican musician Silvestre Revueltas, and added greatly to the effect of the whole. The fact that these two pictures had a rather marked Leftist emphasis prevented their being received on the basis of their artistic merits alone which were certainly of the highest possible caliber. Other Mexican films which have been rather widely shown in the United States are 'La ciudad de los mayas' ('The City of the Mayas') which depicts native life on the peninsula of Yucatán, and 'The Forgotten Village,' based on a story by John Steinbeck who also helped to direct the picture. The untrained native actors of this film, and superb technical direction achieve a fusion which brings a new sincerity to the screen. It is through this medium of the cinema and other expressions of Mexican culture that people in the United States may come truly to know and understand the great nation across its southern frontier.

For further information on Mexican literature, art, music, and leading personalities, see under LATIN AMERICA; LATIN AMERICAN CULTURAL, SOCIAL, AND POLITICAL FIGURES.

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**MEXICO**, a state of the United States of Mexico, in the southeast; bounded by the state of Hidalgo on the north, on the east by Tlaxcala and Puebla, on the south by Morelos and Guerrero, and on the west by Michoacán and Querétaro. Adjoining the state of Morelos is the federal district enclosed by the state of Mexico but outside of its jurisdiction. The area of the state of Mexico is 9,217 square miles and its population about 1,000,900. The capital is Toluca. Several railroads traverse the state and center in Mexico City.

**MEXICO**, Mo., city, county-seat of Audrain County, on Salt River and on the Wabash, the Chicago and Alton and Chicago, Burlington and Quincy railroad; about 115 miles northwest of Saint Louis. Mexico was settled in 1833 and in 1852 was incorporated. It is in an agricultural section, the chief products of which are wheat and corn. The manufactures are dressed marble, flour, shoes, cigars, stove lining, fire-brick products. Mexico is the center of the saddle-horse producing section of the West. It leads also in mules and livestock and has recently completed 18 miles of electric railway north to Santa Fe, Mo. Corn, wheat and blue grass are principal products. Mexico is the seat of the Missouri Military Academy and of the Hardin College for Women, founded in 1873. The charter under which the government is administered was granted in 1893, and provided for a mayor who holds office two years, and a council. Pop. (1930) 8,290; (1940) 9,053.

**MEXICO, City of**, capital of the Republic of Mexico and the finest city in Latin North America, is situated in lat 19° 26' 5" N, long 99° 6' 45" W from Greenwich, at an altitude of 7,434 feet above the level of the sea, near the centre of the Valley of Mexico and in the political subdivision of the republic known as the Federal District. The climate of the city is mild. The temperature ranges from 35 degrees to 90 degrees Fahrenheit, but it seldom falls below 60 degrees or rises above 80 degrees, the mean being between 60 degrees and 70 degrees. The nights and mornings are cool throughout the year, the hottest months being April and May. Pop (1940) including suburbs 1,749,916.

**Topography and Streets.**—At the beginning of the 19th century it was the largest city in the Western Hemisphere. Humboldt then called it «the handsomest capital in America». Today it is one of the handsomest and wealthiest cities in the world. It is the political, the commercial, the educational centre of the Republic, indeed, the centre of every line of national activity. It is distant by rail from: Vera Cruz, on the Gulf of Mexico, 263 miles; Acapulco, on the Pacific, 290 miles; El Paso, Texas, 1,224 miles and 839 miles from Laredo, Texas. Its streets, of which, with lanes, there are 3,200, are straight, extending from north to south, and east to west and intersecting at right angles, except in the newer districts and suburbs where there are some diagonal avenues. The newer portions of the city are chiefly to the southwest. The principal streets are broad, well paved with asphalt, well kept, bordered with good sidewalks, and are electrically lighted. Many of the streets in the older parts of the city are narrow. The street nomenclature was formerly peculiar, a continuous line of street often having a different name at every block. In 1889 the streets were renamed. All extending east and west were named *avenidas* (avenues); all north and south *calles* (streets), one name being given to a continuous thoroughfare. But the people, especially the uneducated classes, clung so tenaciously to the old names that the authorities yielded and the former names were restored. However, readjustments made in 1908, 1909 and 1916–21 have in great part remedied the confusion. There is no exclusively residential section, one of the handsomest residences often being found between two business houses in the heart of the city. The principal business street is the Avenida Francisco I Madero (the quondam Avenida San Francisco). It is the most fashionable shopping street and is reminiscent of similar centres in the great capitals of Europe. The Avenida Cinco de Mayo, like the Avenida Francisco I Madero, starts from the main square, the Plaza Mayor. It is also an important business thoroughfare. Other streets have religious names, taken from the names of churches situated thereon. Still others have very odd names, as Lost Child, Sorrow, Sad Indian. The electric street-car system, starting from the Plaza Mayor, reaches all parts of the city and connects all the suburban towns. The new Pan American Highway leads directly into the city, and is paved to the U. S. border.

**Parks and Public Buildings.**—The principal square is the Plaza Mayor or Plaza de la Constitucion, or Zocalo, situated in the center of

the city. It covers 14 acres, but is only part of the ground enclosed by the walls of the *teocalli* (main temple) of the ancient Aztec city. The entire eastern side of the plaza is bounded by the National Palace, which is said to occupy the site of Moctezuma's new palace. The present building was begun in 1692 and has been added to from time to time till now it has a frontage of 675 feet. It is two stories high and architecturally the least attractive public building in the city, being long, low and monotonously plain. Originally it was the residence of the Spanish rulers of Mexico, but for many years has been devoted to housing some of the executive departments of the national government, including the President's offices. On the second floor is the Hall of Ambassadors, with its walls hung with portraits of Mexican rulers since independence was won, besides a full-length likeness of Washington. Over the main entrance hangs the Liberty Bell, with which, in his church at Dolores, the father of Mexican independence, the priest Hidalgo, called his people to arms on the night of 15 Sept. 1810. It was moved to its present location in 1896, and since, a feature of every celebration of the anniversary of independence is the ringing of this bell at midnight by the President. On the north side of the Plaza Mayor is the cathedral, the city's chief architectural feature, its most majestic, most imposing edifice. It occupies a part of the ground enclosed by the walls of the ancient Aztec temple. It covers a greater area than any other church in the Western Hemisphere, and is surpassed in this respect by only two in the whole world—Saint Peter's at Rome and the Spanish cathedral at Seville. The walls are gray stone. From the sides of the façade rise two bell towers 204 feet in height. The whole pile is crowned by a central tower which commands a superb view of the city and the surrounding valley. The corner stone was laid in 1573; the walls were finished in 1615, and the roof completed in 1623, when the first Mass was said. It was dedicated in 1667 but was not entirely finished until 1791. It occupies an extent of 374 by 187 feet and is of composite architecture, blending the Corinthian, Doric and Ionic. Altogether, both outside and in, it has cost many millions. The railing of the choir is made of a composite of gold, silver and copper and is said to have cost \$1,500,000. The interior contains also some exquisite wood carving and some excellent paintings, the best being one by Murillo, in the chapter-house. In this cathedral in 1822 Agustín Iturbide was crowned emperor of Mexico, and here he is buried, his coffin bearing simply these words: «The Liberator». Here, too, in 1864 the Austrian Archduke Maximilian and his wife, Carlotta, were crowned emperor and empress of Mexico. Other churches especially noteworthy are La Profesa, one of the most beautiful; Santo Domingo, one of the largest; San Hipolito, and San Francisco, the most interesting historically. In the last-named edifice Cortes worshipped and for many years lay buried. Here Iturbide attended the celebration of Mexican independence and here was held his funeral.

Adjoining the National Palace on the north is the National Museum, containing a large and very valuable collection of Mexican antiquities, as well as many treasures identified with the

nation's history from the earliest down to recent times. Some of the most valuable archaeological remains have been found a few feet below the surface while excavating within the grounds which were once enclosed by the walls of the Aztec temple. The most important of these treasures are the Sacrificial Stone, the Aztec Idol of War and Death, and the Stone of the Sun. The last is often erroneously called the Calendar Stone. Besides these there is an almost endless array of small stone specimens, as well as tools, arms, weapons, picture-writing and feather-work. In the section of national history is the banner borne by Hidalgo during his struggle for the independence of the colony, the standard belonging to Cortes, and carried through the period of the Conquest, and Maximilian's silver table-service and coach of state. Here also are located the National Observatory and Bureau of Meteorology.

Near the National Palace is the National Academy and School of the Fine Arts, founded in 1778. It contains paintings ascribed to Murillo, Rubens, Velasquez, Leonardo, but its most interesting work, the one pronounced by distinguished art critics one of the great paintings of the world, represents the Spanish priest and historian, Las Casas, protecting the Aztecs. It is the work of Felix Parra, a native artist, and received the first prize in the Academy of Rome. The Academy receives an annual allowance from the government, a large part of which is spent in prizes.

The National Library is housed in a fine building, once the church of Saint Augustine, which, like other religious foundations, in 1859 when the Laws of Reform took effect, became the property of the state. Portrait busts of distinguished Mexicans ornament the fence enclosing the gardens at the sides. Along the walls of the interior are ranged statues of the greatest men in literature of all times and places. The library contains more than 500,000 volumes. When the monasteries were suppressed, their libraries were gathered here and the collection therefore is especially rich in ecclesiastical literature. In 1537, the first book printed in the New World was printed in the City of Mexico on a printing-press brought from Spain. Its title: 'Escala Espiritual para llegar al Cielo.' No copy of this work remains, the oldest work extant being a history of Tenochtitlan (Mexico) published in 1543. In this city was printed the first music printed in the New World, the first engravings from wood, the first newspaper, *Mercurio Volante* (Flying Mercury), and antedating the first paper in the American colonies by more than 10 years. Besides the National there are several small libraries with collections ranging in size from 7,000 to 14,000 volumes. The national archives are stored in the National Palace. The new Post Office Building was completed in 1907. It is a noteworthy structure in the Plateresque style and cost about \$3,000,000. Other noteworthy structures are the School of Medicine, the School of Mines, the School of Engineering, the General Hospital, the Hotel Iturbide, the buildings of the National Geological Institute, the Normal School, the Department of Communication and Public Works, Department of Foreign Affairs, and the Palacio Municipal, the last named on the south side of the Plaza Mayor and housing the offices of the city and the Federal District.

One of the largest and most beautiful parks and public gardens is the Alameda, situated about half a mile west of the Plaza Mayor, and bounded on the south by the Avenida Juarez. It covers about 40 acres which include the lot wherein the victims of the Inquisition were burned. It is intersected by pleasant walks, shaded by fine trees, adorned with flower beds, flowering shrubs and fountains. Concerts, attended by all classes, are given here every Sunday afternoon. A very short distance from the Alameda, Avenida Juarez opens into the Paseo de la Reforma, one of the most beautiful avenues in the world. It was designed by Maximilian, who named it the Boulevard Imperiale. It is the fashionable afternoon drive and promenade. It is over two miles long and is lined on each side by double rows of trees, beneath which are foot-ways and at their sides stone benches. Starting at the equestrian statue of Charles IV of Spain, it expands at regular intervals into *glorietas* (circular park expansions), some of which are adorned with monuments of the greatest men in Mexican history. This statue of Charles IV is one of the city's finest works of art. It was made in Mexico at the beginning of the 19th century by Manuel Tolsa, it being the first important piece of bronze cast in America. At another circle is a statue of Columbus, and still further on one of Cuauhtemoc, the last of the Aztec emperors.

The Paseo extends to the gates of Chapultepec, a rocky height rising abruptly from the level of the surrounding plain. A beautiful park, set with gigantic cypresses, which antedate the Spanish Conquest, encircles the base of the rock. A palace crowns the hill, a part of which is occupied as the official home of the President. Back of the hill is the battlefield of Molino del Rey. The view from the front is regarded as one of the most beautiful in the whole world,—the long vista of the Paseo to the city, standing in the centre of the valley, encircled by high mountains from which rise the snow-capped peaks, Ixtaccihuatl and Popocatepetl, 16,000 and 17,782 feet respectively above the level of the sea. In the park at the base of the rock there is a monument to the Mexican cadets who fell in 1847 while defending the hill from the assault of the United States army.

**Suburbs.**—The chief suburbs are: Tacubaya, San Angel, Coyoacan, Popotla, Guadalupe and the towns along the line of the Viga Canal. All are within a radius of eight miles of the centre of the city. The Viga Canal is about eight miles long and connects the city with lakes Xochimilco and Chalco. From the gardens along this waterway come the flat-bottomed boats loaded with vegetables, fruits and flowers for the city market. Toward the headwaters of the canal are the *Chinampas* (so-called floating gardens). That they once floated is certain, but they are stationary now and are mere patches of ground intersected by narrow channels, and used as market gardens. At Iztacalco are other floating gardens. A road, the Paseo de la Viga, borders one side of the canal. Guadalupe Hidalgo, two miles north of the capital, contains the celebrated shrine of the Virgin of Guadalupe, the patron saint of Mexico. Here the treaty of peace, following the war of 1847 with the United States, was signed. At Popotla is the famous tree, *El Arbol de la Noche Triste* (Tree of the Dismal Night), beneath which Cortes is said



to have sat and wept on the night of 1 July 1520, after his expulsion from the city. Coyoacan is even older than the City of Mexico. Cortes made it the seat of government while he superintended the rebuilding of the conquered city. The house in which he lived is still standing. San Angel is a beautiful little town, well known, too, for its excellent fruits, flowers and vegetables. At Tacubaya is a national astronomical observatory. The town contains many palatial homes.

**Public Works.**—The city is situated at nearly the lowest point in the valley, and from the earliest times had always been in danger of inundation. There are six lakes (so called) within the valley, all of which, with the exception of Texcoco, are above the level of the city. In times of heavy rains their waters sometimes overflowed the banks and, having no outlet through the surrounding mountains, found their way to Lake Texcoco which, being only two or three feet below the level of the city, rose sufficiently to flood it. Before the Spanish Conquest and for some time afterward dikes were built about the city to keep the flood waters out, but these proved ineffective. Inundations occurred on an average once in 25 years. In 1608 the Cut of Nochistongo was made through the mountains, as an outlet for the flood waters of the highest lake in the valley which is 13 feet above the level of the city. But this work only partly relieved the situation. In 1629 there was another flood and the city was submerged to a depth of three feet for five years. This paralyzed business and caused great loss of life and property. The Spanish government ordered that the city be abandoned and another site be chosen on higher ground. But presently, owing to a very dry season and to earthquakes, the waters passed away and the royal order was not carried out. Not till 1789 was the city freed from the menace of deluges, but the menace of malaria and epidemics remained. In 1885 the gigantic canal and tunnel project was jointly undertaken by the city and national government. It was designed to serve a two-fold purpose: to control the waters of Lake Texcoco, thus removing all possibility of future inundations; to be a continuation of the city's sewerage system. It starts just east of the city, where it joins the net work of city sewers. It extends to the mountains, a distance of 43 miles, connecting with Lake Texcoco, on its way. It pierces the mountains by a tunnel, seven miles long, and beyond the mountains is continued as a canal for several miles, finally emptying into a river which carries the city waste to the Gulf. This gigantic undertaking was completed in 1903 and ranks among the truly great enterprises of modern engineering. The city can never again be inundated and it is now provided with an effective sewerage system of which from the very beginning of its existence it had been in the greatest need. The water supply is taken mainly from the western mountains and from several natural springs at the foothills to the south of the city. The latter supply is now largely used as potable water. Several aqueducts bring it to the city.

**Commerce and Industry.**—The city is the commercial, financial and industrial centre of the Republic. It possesses several wealthy banking institutions, the largest being the National Bank of Mexico. There are hundreds of industrial es-

tablishments, most of which have sprung up in recent years with the advent of electric power. Textiles, cigarettes, cigars, hats, furniture, glass, pottery, rope, wire, starch, glue, soap, musical instruments, leather, boots and shoes, ice, alcohol, beer, flour, paper, etc., are manufactured. The trade interests are largely in the hands of foreigners, mostly Germans, Frenchmen, Englishmen and Americans. There are several public markets. There are also hundreds of licensed shops for the sale of wines, liquors, beers and pulque. The trade of the capital as the whole sale centre of the Republic is facilitated by a number of lines of railway, which radiate to all quarters and link up all important centres.

**Municipal Administration.**—The Palacio Municipal (city hall) is situated at the south side of the Plaza Mayor. The present building dates from 1720. In its council chamber are portraits of all the governors of Mexico from Cortes. The latter established the municipal corporation of Mexico in 1522. Its officers were two *alcaldes* (judges), four *regidores* (councilmen), an attorney and a notary. Thereafter, for nearly 400 years, till 1903, the city government was vested in a city council, composed of aldermen, a mayor and a governor of the Federal District. From 1903, the Federal District, of which the City of Mexico is the chief city, has been governed similarly to the District of Columbia, United States. The powers of government and administration are lodged with three federally appointed officials, namely, the governor of the district, the president of the Superior Board of Health, and the director of public works. Besides the special powers belonging to each of these officials, the three act together as one superior governing body known as the Superior Council. The city continues to elect a board of aldermen, but its powers now are restricted to those of advice, supervision and veto. The board may suggest measures to the three district commissioners for the benefit of its constituents; it may see that measures adopted are properly carried out; it may suspend public works by a veto, which veto can be annulled only by the President of Mexico, acting by the advice of his cabinet. The municipal revenues are derived from taxes on liquor, vehicles, theatres, water supply, slaughter houses and other commercial establishments. The revenues aggregate approximately \$7,000,000 yearly.

**Public Health.**—The death rate has always been very high, sometimes reaching 50 per 1,000. This high rate has been owing: partly to the great infant mortality among the very poor, especially the peon class; partly to very defective drainage. With the completion of the modern sewerage and drainage system, conditions began to show great improvement.

**Education.**—The capital is the seat of the National University. There are several professional schools and a great number of private pay schools. Education has recently been extended to the masses through a good system of primary schools.

**Charities.**—There are a great many charitable institutions. Of these more than 20 are hospitals, the oldest being that of Jesus Nazareno, founded by Cortes. Besides these public hospitals, there are also several private ones, maintained by voluntary contributions. There are also asylums for the poor, insane, blind and

foundings. A unique and very remarkable benefaction is the Monte de Piedad (Mountain of Mercy), the national pawnshop. It was founded in 1774, by a wealthy mine owner for the sole purpose of lending to the poor, on pledges, sums of money, at very low rates of interest, thus protecting them from the extortionate charges of private pawnbrokers. After a certain length of time the unredeemed pledges are sold, and when all expenses are paid the balance in each case is returned to the original owner.

**History.**—Of what often passes for the history of the city before the Spanish Conquest, and indeed, for many years after, it would be hard to tell how much is true, and how much false. But there is no doubt that it was founded by the Aztecs. It is generally accepted as true that they came from some unknown region in the Northwest, perhaps north of the Gulf of California, that for more than 100 years they wandered in the Mexican Valley, that they settled near the centre of the valley on islands of Lake Texcoco, in the early part of the 14th century. Tradition says they were directed by the oracle to settle where they had seen, perched on a cactus, an eagle devouring a snake. Hence the centre of the national coat-of-arms. The original name of the city was Tenochtitlan.

In the centre was the great *teocalli* (temple). The first rude houses, standing on piles and built of mud and rushes, before the Spanish Conquest had been replaced by buildings of stone. The city had a radius of over a mile; an area of about one-twentieth that of the present city. It was intersected by canals; hence sometimes called the Venice of the Western World. With the mainland it was connected by causeways. During the Spanish Conquest (1519-21) the Aztec city was partially destroyed. No trustworthy record exists as to the size of the population at this time. One contemporary writer states that it was 500,000; another, 30,000. On the same site in 1522 Cortes began the building of the Spanish city. But so many changes have been made since then that the city of today retains hardly a trace of the city founded by Cortes. In 1600 its population consisted of 7,000 Spaniards and 8,000 Indians. In 1746 it had a population of 90,000; 50 years later one of 113,000.

For nearly 300 years it was the capital city of New Spain. Some of the viceroys were good men and able rulers and among other good deeds did much to improve the condition of the city. Events, not already mentioned, especially noteworthy in the life of the city, were: The riot of 1692, provoked by famine, and causing the loss of more than \$3,000,000 worth of property; the capture of the city by Agustín Iturbide and his triumphal entry 27 Sept. 1821, the date which marks the end of Spanish power in Mexico; Iturbide's election as emperor, 22 May 1822; the capture of the city in 1847 by the Americans under General Scott; the taking effect in 1857 of the Laws of Reform, and the consequent suppression of convents and monasteries, and the confiscation of church property; the capture of the city by the French, 9 June 1863; its capture 21 June 1867 by the Liberal army led by General Díaz; the return to the city nearly a month later of President Juárez. During the Díaz régime from 1884 to 1910 the city had a period

of uninterrupted peace. Street rioting occurred during Madero's administration and in February 1913 the city was the battleground of the followers of Madero and the Revolutionists under Felix Díaz and Bernardo Reyes. For 10 days preceding the fall of Madero public buildings were bombarded and street fighting occurred. In August 1911 the Constitutionalists occupied the city and in the months following it was held by Carranza, Zapata, Villa, and Carranza a second time. Since 1930 several noteworthy public buildings and landmarks have been constructed in Mexico City. These include the Palace of Fine Arts, a beautiful marble edifice begun in 1900 and completed in 1931 at a cost of over 36,000,000 pesos; the Supreme Court Building, decorated with Orozco murals; and the imposing Arch of the Revolution, erected as a monument to that great social struggle. The entrance of the International Highway to the city is beautifully adorned with much fine statuary. There are also in the city several modernistic apartment houses, hotels, and private homes, some with the most lavish buildings of this class in the United States. Murals by Diego Rivera may be found in several buildings in Mexico City, notably in the National Palace, the Ministry of Health, the Hotel Reforma, and in the Palace of Cortés in Cuernavaca.

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**MEXICO, Federal District of**, a territory set apart for the exclusive use of the Central Government of the Republic of Mexico in the same manner that the District of Columbia was set apart for the exclusive use of the Central Government of the United States and for the same reason, namely, so that the actions of the Federal Government might not, in any way, be hampered by state interference. It is bounded north, east and west by the state of Mexico, out of which it was carved, and south, by the state of Morelos; area, 579 sq. m.; pop. (1940) 1,749,916. The district (*Distrito Federal*) was created by a law of 18 Nov. 1824. Rules for its administration were enacted 6 May 1861 and amended 14 Dec. 1900. Its present political and administrative status was fixed by the organic law of 26 March 1903 and the new constitution which was promulgated 5 Feb. 1917. Originally the district was divided into one urban municipality and four rural prefectures, but under the law of 26 March 1903 it was partitioned, for administrative purposes, into 13 municipalities, of which the City of Mexico is by far the largest and most important. The other municipalities are Guadalupe-Hidalgo, Atzacapotzalco, Tacuba, Tacubaya, Mixcoac, Cuajimalpa, San Ángel, Coyoacán, Tlalpam, Xochimilco, Milpa Alta and Ixtapalapa. The local affairs of the district are administered by a Superior Governing Council, consisting of three officers—the governor of the Federal District, the president of the Superior Board of Health and the director-general of public works—all appointed by the President of



the Republic, and each of whom must be a citizen of Mexico, over 25 years of age, and not an ecclesiastic. Speaking generally, each of the three officials is independent and alone responsible in his own department. This responsibility is limited, however, by the right of the Superior Council—that is, the three officials acting together—to revise, confirm, reform or revoke the rulings of any one of the three members of the council whenever such rulings are called into question. The other duties of the Superior Council are merely advisory. It may propose changes in the district laws or administration rules for the government and organization of officers and public services; it may suggest improvements in works of public utility, such as water supply, drainage, sanitation, the opening or widening of streets, or the creation of special commissions to study and report upon such matters. It also has general supervision over the making of contracts for public works, but all such contracts must be submitted to the higher authority. While each of the above mentioned officials is the head of his own department and is responsible for the activities thereof, subordinate officers and employees are appointed by the Federal Executive. The governor of the Federal District is the chief political authority thereof. He makes public and enforces all laws, rules and decrees emanating from higher authority, has charge of the police and fire departments, imposes penalties for violations of ordinances, supervises penal establishments, civic festivities, public diversions, plays, the sale of intoxicating liquors, hotels and restaurants, street cars, cabs, the civil register and the inspection of weights and measures. The director general of public works has supervision over the water supply, streets and roads, parks, monuments, municipal lighting, drainage and street cleaning, public buildings not under direct federal control, cemeteries; construction, repair and maintenance of slaughter-houses and markets, inspection of building operations, and over woods, lands, commons and other communal property. The president of the Superior Board of Health exercises supervision over all sanitary works, as provided by the Sanitary Code, and, in addition, directs general sanitary inspection, especially of slaughter-houses, markets, meats from other sections and cemeteries. A certain measure of popular government is vested in the *ayuntamientos*, or town councils, the members of which are elected by popular vote for terms of four years. Each of the 13 municipalities in which the district is divided has its own *ayuntamiento*. To be a member of one of these councils, one must be a citizen of Mexico, resident within the municipality, in full enjoyment of civic and political liberty, more than 25 years of age, and not an ecclesiastic. The *ayuntamiento* of the City of Mexico is composed of 21 members, that of Tacubaya of 11 members and those of the other 11 municipalities of seven members each. Each *ayuntamiento* elects from its membership a president and vice-president who hold office for two years. The law directs that the *ayuntamiento* of the interested municipality shall be consulted by the Ministry of the Interior, the governor of the district, the director-general of public works and the president of the Superior Board of Health, as the case may be, upon matters of general importance in the municipality such as water supply, local sanitary work, estab-

lishment of new settlements and the exploitation of woods, lands and commons. The *ayuntamiento* must be consulted also with respect to all contracts relating to the execution of any work in connection with any of the above mentioned subjects and as to all other contracts of a municipal character having a duration of five years or more, or which call for a total expenditure of 100,000 pesos or more, or an annual expenditure of 25,000 pesos or more. In all of these matters, the *ayuntamientos* have, by a two-thirds vote, the right of veto. The effect of this veto, when exercised, is to suspend for four months the project or contract in question. At the end of the four month's period, if the *ayuntamiento* still opposes the proposition by a vote of three-fourths of its members, the matter is submitted to the President of the Republic for final solution. The City of Mexico (q v), capital of the Republic, is the capital also of the Federal District. While the government of the district is copied after and, in many respects, is similar to the government of the District of Columbia, its citizens, unlike the citizens of the District of Columbia, are not disfranchised. They elect not only the members of the *ayuntamientos* but elect also, as does each of the states of the Republic, two federal senators and one member of the Federal House of Representatives for each 60,000 population or fraction thereof in excess of 20,000. The Federal District is the most thickly populated section of Mexico, having an average of approximately 1,660 inhabitants to the square mile. See, also, MEXICO, CITY OF.

**MEXICO, Gulf of**, an arm of the Atlantic Ocean, bounded on the north by the United States and on the south and west by Mexico. It is oval in form; its greatest length is, from east to west, about 1,100 miles; from north to south, about 800 miles; area about 700,000 square miles. It has a continuous coast-line of about 3,000 miles. Its maximum depth is about 12,715 feet, and within the basin, exclusive of the submerged coastal plain, the average depth is about 9,000 feet. In former ages the area of the gulf was much greater than at present; it included the lower basin of the Mississippi, Florida, a large part of eastern and southeastern Mexico, and the basins of the northern rivers of South America. The outlet of the Gulf is on the east, between the peninsulas of Yucatan and Florida, a distance of 450 miles. At this outlet is the island of Cuba, which is separated from Florida by the Strait of Florida, 125 miles wide, and from Yucatan by the Yucatan Channel, 120 miles wide. The Yucatan Channel opens into the Caribbean Sea and the Florida Strait enters the Atlantic.

The temperature of the gulf is from eight degrees to nine degrees higher than in the Atlantic in the same latitude. The temperature at the point of greatest depth is 39½°, or the same as the temperature at the greatest depth of the Yucatan Channel, although the maximum depth of the gulf is about 5,943 feet more than that of the channel. The chief current is the Gulf Stream (see OCEAN CURRENTS) which enters the gulf through the Yucatan Channel, circles the interior and passes out through Florida Strait. The winds are about as on other parts of the globe where north-equatorial conditions exist; the prevailing winds from the north blow from September to March, and from the south from

March to September. The severe gales are in the winter. The northern part of the gulf, from Mexico to Florida, is really a coastal plain averaging from 40 to 100 miles wide. The basin off the Mexican coast sinks rapidly to the submarine plain, and a short distance from shore reaches the maximum depth. The Bay of Campeachy is the largest indentation. Other bays are Havana, on the coast of Cuba, Pensacola, Tampa, Mobile and Galveston, on the United States coast, and Veru Cruz on the coast of Mexico. A number of small bays and lagoons are on the western coast. The principal islands are at the entrance of the gulf; Cuba the largest, and north of Cuba, the Florida Keys, a group of coral islands. There are a number of small islands in the southeastern part of the gulf, off

the coast of Yucatan, and some in the Bay of Campeachy. The delta of the Mississippi consists of low, marshy islands. The principal rivers which flow into the gulf are the Mississippi, the Colorado, Brazos, Sabine, Mobile and the Appalachicola from the United States, the Rio Grande on the boundary between the United States and Mexico, the Rio Verde, and several short streams from Mexico. The chief cities on the coast are Havana, Florida Keys, Tampa, Mobile, Galveston and Vera Cruz. New Orleans and Houston have direct ship communication with the gulf, and Mexico City uses Vera Cruz as its port.

**MEXICO CITY CONFERENCE.** See  
PACTS AND CONFERENCES: WORLD WAR II.







